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Mexico

Pan American Union

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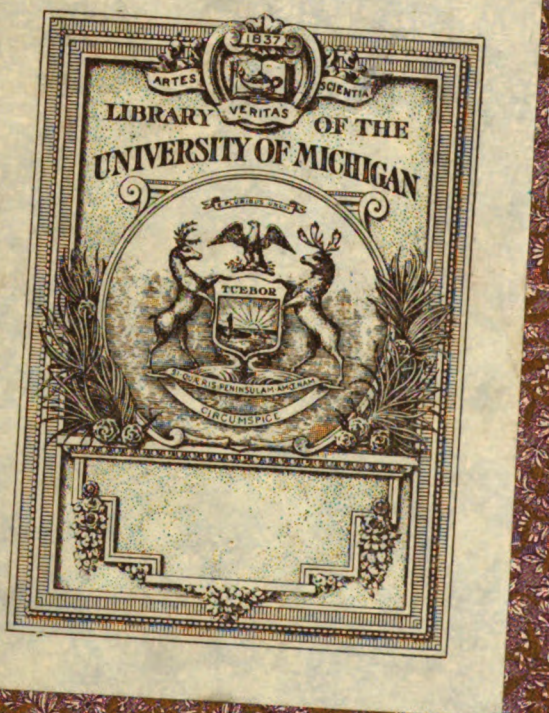
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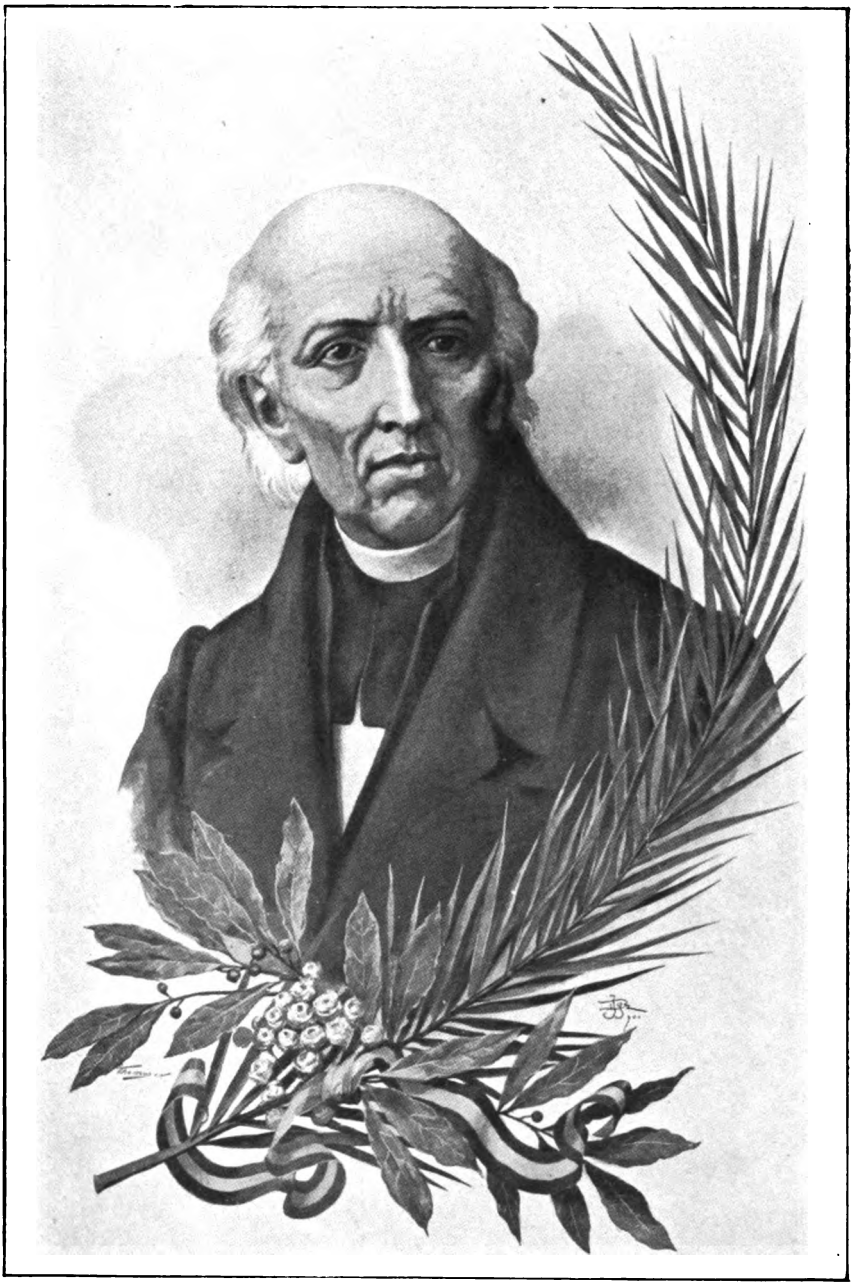

HIDALGO

Miguel Hidalgo y Costilla, the Father of the Mexican Independence

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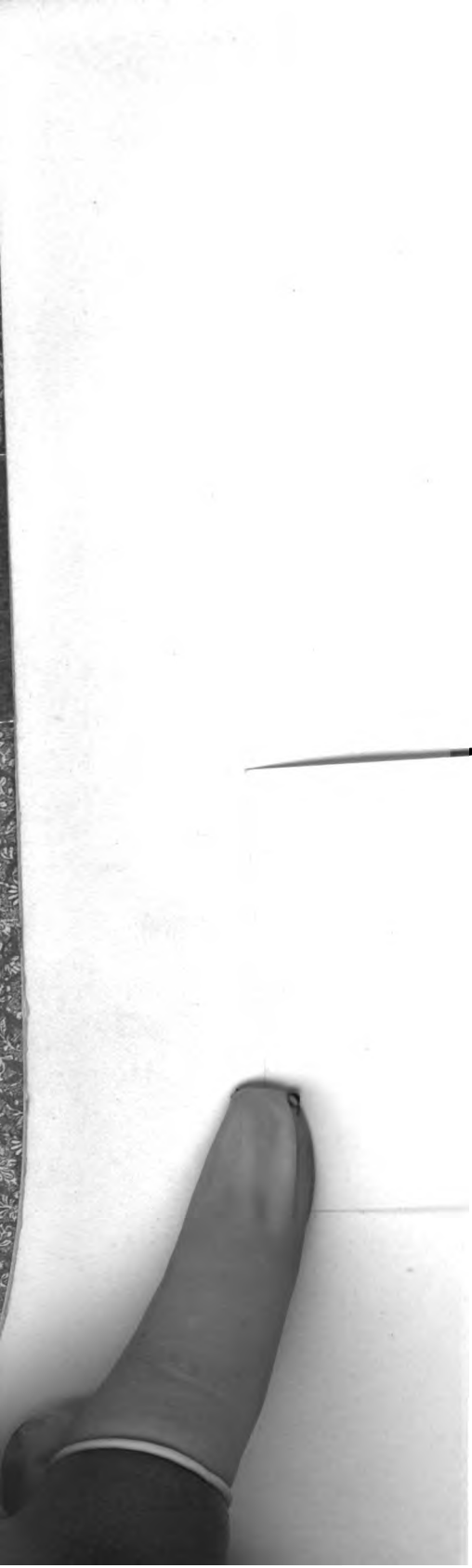

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MEXICO

A GENERAL SKETCH

COMPILED BY THE

PAN AMERICAN UNION

JOHN BARRETT
Director General

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Assistant Director

WASHINGTON, D. C.
JUNE, 1911

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INTRODUCTION

THIS Handbook of Mexico has been prepared to meet the great demand which is made upon the Pan American Union for comprehensive and specific data regarding Mexico. It endeavors to give those facts concerning geography, configuration, climate, agriculture, mineral and timber resources, history, public institutions, army and navy, exports and imports, railways, posts and telegraphs, finance, political divisions, cities, people, and other important features which are desired by persons intending to study Mexico, travel within its limits, make investments, or engage in export and import trade between it and other countries. While every effort is taken to secure accuracy, the Pan American Union must not be held responsible for errors which may have crept in through mistakes appearing in the original sources of information. These are believed to be very few, but some are necessarily unavoidable in a review of this extent and character. The map of Mexico, while not an official publication of either the Pan American Union or the Mexican Government, and hence not one for which they are responsible, is found practical and useful for this work. If persons seeking knowledge regarding subjects not described in this Handbook will communicate with the Pan American Union, it will endeavor to supply the desired information. Mexico is so large, and is making such progress, that it is manifestly impossible to do justice to every feature of its growth and development, but it is believed that a Handbook of this character will be welcomed by all persons interested in that remarkable country. The Director General wishes to give credit to Dr. Albert Hale and Francisco A. Godoy, of the Pan American Union staff, for their efforts in collecting and editing the data for this work.

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PRESS OF BYRON S. ADAMS
WASHINGTON, D. C.

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MEXICO

PART I.

CHAPTER I.

General Description.

THE word *México** is connected with the earliest inhabitants of the country. They called themselves *Mexicatl*, probably derived from the name of their war-god, *Mexitli*.

New Spain, as this region was called by the historians of colonial times, was situated between 9° and 40° north latitude, and 80° and 50° west longitude. Its length was 2,100 miles (3,379 kilometers), and its breadth 1,600 miles (2,574 kilometers). The United Mexican States of to-day lie between 14° 30′ 42″ and 32° 42′ latitude north; and 86° 46′ 8″ and 117° 7′ 31″ longitude west from Greenwich. The superficial area is 765,537 square miles (1,983,259 square kilometers). The northern and northeastern boundary of the Republic is the United States; the eastern, the Gulf of Mexico, the Caribbean Sea, British Honduras and Guatemala; the southern, British Honduras, Guatemala and the Pacific Ocean; and the western boundary is the Pacific Ocean. Its greatest length is about 1,942 miles (3,126 kilometers), its greatest width 762 miles (1,226 kilometers). The widest part is along its boundary with the United States, and the narrowest is at the Isthmus of Tehuantepec, where the distance from ocean to ocean is only 134 miles (216 kilometers). The coast line measures 5,486 miles (8,830 kilometers), as follows: Gulf of Mexico and Caribbean seacoast, 1,603 miles (2,580 kilometers), Pacific Ocean and Lower California, 3,883 miles (6,250 kilometers), of which 1,864 miles (3,000 kilometers) pertain to the latter.

*The Mexican Government retains the spelling *México*, with the accent; in Spanish publications appearing in other countries, *Méjico* is preferred. The pronunciation in each case is the same, *x* and *j* both having the sound of the English *h* in hew and Hugh.

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Boundaries.

The dividing lines between Mexico and the contiguous countries can be described as follows:

With the United States.—The boundary with the United States, as fixed by the treaties of February 2, 1848, and December 30, 1853, begins at the mouth of the Rio Grande on the Gulf of Mexico and follows the river to El Paso, Texas (parallel 31° 47′ north). The distance along the axis of the river is 860 miles (1,384 kilometers), not counting sinuosities, which are constantly changing; the actual length of the channel is about 1,300 miles (2,092 kilometers). West of El Paso the distances are as follows: Along parallel 31° 47′ north latitude, from the Rio Grande west, 99 miles (159 kilometers);* thence south to parallel 31° 20′ north latitude, 31 miles (50 kilometers); thence west along this parallel to the one hundred and eleventh meridian of longitude west of Greenwich, 170 miles (274 kilometers); thence in a straight line to a point on the Colorado River 20 miles (32 kilometers) below the junction of the Gila River, 235 miles (378 kilometers); thence up the middle of the Colorado River to the intersection with the old line between Upper and Lower California, 17 miles (27 kilometers) in a straight line; thence to a point on the Pacific Ocean distant one marine league south of the southernmost point of the Bay of San Diego, 141 miles (227 kilometers). This makes the total distance from El Paso to the Pacific Ocean 693 miles (1,115 kilometers), and from the Gulf of Mexico to the Pacific Ocean 1,553 miles (2,499 kilometers) if measured on the axis of the Rio Grande alone, or about 1,993 miles (3,207 kilometers) if the sinuosities of that river are considered.

With Guatemala.—The boundary with the Republic of Guatemala, as fixed by the treaty of September 27, 1882, and the agreement of April 1, 1895, runs from a point in the Pacific Ocean three leagues from the mouth of the Suchiate River, up the deepest channel of that river, to the place at which it intersects the vertical plane through the highest point of the volcano of Tacaná, 25 meters (82 feet) from the southernmost *garita* of Talquian—this last to remain in Guatemalan territory; thence to a determined point 4 kilometers (2.48 miles) beyond the *Cerro de Ixbul;* thence eastward along the parallel of latitude through that point to the deepest channel of the Chixoy River; thence along this channel to the Usumacinta River, along that river to a point on the parallel 17° 49′, technically described by the treaty, and finally eastward to the line of British Honduras.

*This is actually one mile (1.60 kilometers) shorter than the treaty calls for.

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With British Honduras.—The boundary with *Belice* (British Honduras) as fixed by the treaty of July 8, 1893, begins in the *Boca de Bacalar Chica*, the Strait separating Yucatan* from the Ambergris Key, runs in the center of that channel in a southwestern direction to parallel 18° 9′ north latitude, thence northwest * * * to parallel 18° 10′ north; thence toward the west it continues through the neighboring Bay as far as 88° 2′ west longitude, then toward the north to parallel 18° 25′ north latitude; and again to the west to the meridian 88° 18′ west longitude, following this meridian to north latitude 18° 28½, where the mouth of the *Rio Hondo* is encountered; the deepest part of the channel of this river is followed, passing on the west the Island of *Albion,* then ascending the *Arroyo Azul* to * * * a point north of the intersection of the boundary lines of Mexico, Guatemala and British Honduras; from this point it runs south as far as 17° 49′ north latitude, the boundary line between Mexico and Guatemala. The *Rio Xnohha* (or *Snosha*) remains, therefore, in Mexican territory.

Cessions of territory.—The Mexican cessions to the United States are estimated as follows:

	Square miles.	Square kilometers
Annexation of Texas	362,487	938,841
Guadalupe-Hidalgo treaty (February 2, 1848)..	522,568	1,353.451
Gadsden treaty (purchase) (December 30, 1853)	45,535	117,936

Configuration.

Mexico possesses an interesting physical formation. Rising rapidly by a succession of terraces from the low sandy coasts on the east and west, it culminates in a central plateau running in a northwesterly and southeasterly direction, and having an elevation varying from 4,000 to 8,000 feet (1,219 to 2,438 meters) above the sea. It is pre-emiently a region of mountain elevations, but this is not always to be recognized in the interior on account of the development of its broad table-land, whose flat or gently undulating surface, rising from the depression of the Rio Grande to graduated altitudes, masks the configuration of the land. Much of this plateau has been formed through a progressive and long-continued accumulation of detrital material, representing in part the distributed products resulting from mountain destruction, and in greater part the discharges from an almost endless number of volcanic openings. These have filled the original valleys to the lips, and it is thus upon a new surface that the

*That portion of the State of Yucatan mentioned in the treaty became, by the act of December 14, 1900, a Federal Territory under the name of Quintana Roo.

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more recent or existing valleys have been imposed. Thus the great central plateau appears to be merely a filled-up series of troughs, not wholly unlike the snow-accumulated table-land of Greenland, through whose margins alone the buried mountains protrude their summit peaks. In Mexico, too, especially in the loftier parts of the plateau, buried mountains rear their summits as "islands" above the enveloping mass; elsewhere they make continous ridges or chains, whose crest-lines may be as much as 10,000 feet (3,048 meters) above the sea.

The eastern coast of Mexico, bathed by the Caribbean Sea and the Gulf of Mexico, is flat, low and sandy, except in a few places where the mountains are so close as to be visible from the shore. On the Pacific side, the coast, though generally low, is here and there broken by spurs extending from the cordilleras to the ocean.

The principal gulfs are those of California, Tehuantepec and Mexico, this last being one of the largest in the world. There are innumerable bays, the principal ones being Campeche on the Gulf of Mexico, and Tehuantepec on the Pacific, on opposite sides of the Isthmus of Tehuantepec. The more important bays on the Gulf of California and on the sea coasts of the Republic will be mentioned in the description of the individual States.

Mexico has many islands near the coasts, none of them very large and some of them uninhabited, although as a rule they are of great fertility and capable of supporting a large population. Among the best known are San Juan de Ulua, opposite the port of Veracruz, and Tiburon, off the coast of Sonora.

Water System.

Mexico is deficient in large permanent streams, and its rivers offer but little opportunity to navigation. The topographical conditions of the country are such as to cause the streams, in their progress toward the sea, to be continually precipitated in the form of cascades, etc., thus rendering navigation difficult but greatly facilitating their availability for motive power. The principal rivers are the *Rio Grande*, 1,500 miles (2,414 kilometers) long, which rises in Colorado (United States of North America), passes through New Mexico, its waters being used on its way for irrigation purposes, and forms, from El Paso to the Atlantic Ocean, the boundary line between Mexico and the United States; the *Rio Lerma* (Santiago), which rises in the mountains southwest of Toluca, passes through the Lake of Chapala, which it leaves under the name of Guadalajara, changing its name again to (Tololotlán and Rio Grande are also used) Santiago before it empties into the Pacific Ocean near San Blas, having traversed

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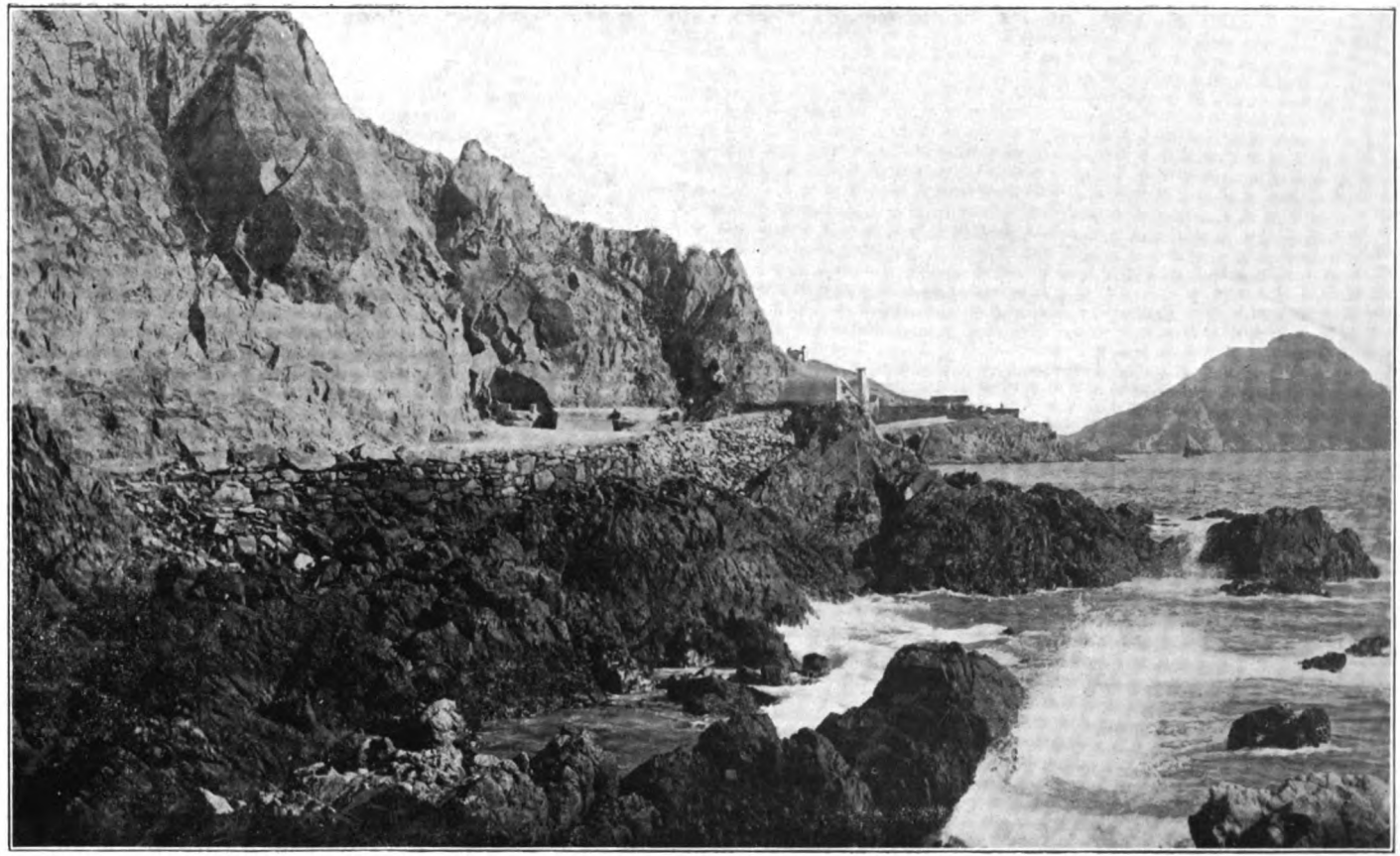

"Clau'ssen" Drive (Paseo) Along the Coast at Mazatlan, State of Sinaloa.

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540 miles (869 kilometers) of Mexican territory; about fifteen miles (24 kilometers) from the city of Guadalajara the Lerma is precipitated over the magnificent fall of Juanacatlan, the Niagara of Mexico; the *Rio Balsas* or *Mescala,* 426 miles (685 kilometers) long, which rises in the central plateau near the Valley of Mexico, passes through the State of Puebla to the southwest, and empties into the Pacific at Zacatula in the State of Guerrero; it is navigable for steamers for a few miles only from its mouth, being in places shallow, swift and precipitous, in others wide and deep; the *Rio Fuerte* and *Rio Yaqui,* which flow into the Pacific in the north of the Republic, but are navigable for small vessels only; the *Rio Pánuco,* which rises north of the Valley of Mexico, and under the names of *Tula* and *Montezuma* describes a vast semicircle toward the west across the State of Hidalgo, receives the waters of several tributaries and finally empties into the Gulf of Mexico at the port of Tampico; the *Rio Papaloapam,* which rises in the State of Oaxaca, passes through the State of Veracruz and empties into the Gulf of Mexico a few miles below Veracruz; the *Rio Coatzacoalcos,* which forms the harbor of Puerto Mexico, and the *Rio Grijalva* and *Rio Usumacinta,* the three last being navigable for a considerable distance above their mouths.

The largest lake on Mexican territory is the Chapala Lake, measuring about 70 miles (112 kilometers) long by 20 miles (32 kilometers) wide. Cuitzeo and Patzcuaro in the State of Michoacan are extremely picturesque. The Valley of Mexico had at one time seven lakes, one fresh and six salt water, but the surface they formerly occupied has been much diminished. Other lakes and the lagoons (*lagunas*), insets from the sea or bodies of water closely connected with the oceans, will be mentioned in the description of the several States.

Mountain System.

Two cordilleras, or high mountain ranges, traverse Mexico, running almost parallel to the coast, one along the Gulf of Mexico and the other along the Pacific. The former is from 10 to 100 miles (16 to 160 kilometers) inland, leaving an inclined plane between the sea and the foot of the mountains, while the latter is near the coast, with only a narrow strip of land between the mountains and the sea; this range has several branches running in different directions, the most continuous being the Sierra Madre of the Pacific. Parallel to this last-named range is the Sierra de la Giganta in lower California, which slopes abruptly toward the east like the Atlantic escarpments. Corresponding with the Sierra Madre on the west are the broken eastern elevations of the central plateau.

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FALLS OF JUANACATLAN, NEAR GUADALAJARA, STATE OF JALISCO.
They are sometimes called the Mexican Niagara and from them the electric power for that city is derived.

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The cordillera of Anáhuac, surrounding the valleys of Tenochtitlan and Puebla, is the most important orographically and historically of the central cross ridges, and it is supposed to culminate in Popocatepetl and Ixtaccihuatl. It seems, however, that these volcanoes belong to a more recent upheaval, as they are nearly at right angles to the main axis of the central plateau, south of the line formed by the Orizaba or Citlaltepetl, on the coast south of Veracruz, to which correspond, on the west, the Jorullo in Michoacan, Colima near the coast in Jalisco, and the Revillagigedo group on the Pacific. Nearly parallel to these are the sierras of Guerrero, of Oaxaca, and southeast of the Isthmus of Tehuantepec those of Chiapas near the frontier of Guatemala.

Geology.

"In the higher ranges the prevailing formations are granite, which seem also to be the foundations of the plateaus, above which rise the traps, basalts, mineral-bearing porphyries and more recent lavas. This is the basis of Lyall's theory that Mexico consisted originally of granite ranges with intervening valleys subsequently filled up to the level of the plateaus by subterranean eruptions. Igneous rocks of every geologic epoch certainly form to a large extent the superstructure of the central plateau. But the Mexican table-land seems to consist mainly of metamorphic formations partly upheaved, partly interpenetrated and overlaid by igneous masses of all epochs and which are chiefly represented by shales, grit rock, greenstones, silicious schists, and especially unfossiliferous limestones. All these formations are alike remarkable for the abundance and variety of their metaliferous ores, such as silver, copper and gold. The highest ranges are formed mainly of plutonic and volcanic rocks, such as granites, syenites, diorites, mineral-bearing trachytes, basalts, porphyries, obsidian, pearlstone, sulphur, pumice, lavas, tufa, and other recent volcanic discharges. Obsidian (itzli) was the chief material formerly used by the natives in the manufacture of their cutting implements, as shown by the quarries of the *Cerro de las Navajas* (Knife Cliff), near Real del Monte and Pachuca, in the State of Hildalgo. Vast deposits of pumice and the purest sulphur are found at Huichapan and in many of the volcanic craters. But immeasurably the most valuable rocks are the argentiferous porphyries and schists of the central plateau and of Sinaloa, unless they are destined to be rivaled by the auriferous deposits of Sonora. Horizontal and stratified rocks, of extremely limited extent in the south, are largely developed in the northern States, and chalk becomes very prevalent toward the Rio Grande and Rio Gila valleys. To this chalk and to the

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POPOCATEPETL.

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sandstone are probably due the sandy plains which cover vast tracks in North Mexico, stretching thence far into New Mexico and Texas.

"None of the horizontal layers seems to be very rich in ores, which are mainly found in the metamorphic, Paleozoic and hypozene rocks of Durango, Chihuahua and the south. Apart from Sinaloa and Sonora, which are now known to contain vast stores of the precious metals, nearly all the historic mines lie on the south central plateau at elevations of from 5,500 to 9,500 feet (1,678 to 2,895 meters). A line drawn from the capital to Guanajuato, and thence northward to the mining town of Guadalupe y Calvo of Chihuahua, and southward to Oaxaca, thus cutting the main axis of upheaval at an angle of 45°, will intersect probably the richest known argentiferous region in the whole world.

"Of other minerals the most important are copper, found in a pure state near the city of Guanajuato, and associated with gold in Chihuahua, Sonora, Guerrero, Jalisco, Michoacan, and elsewhere; iron in immense masses in Michoacan and Jalisco and in Durango, where the *Cerro del Mercado* is a solid mountain of magnetic iron ore; lead associated with silver, chiefly in Oaxaca; tin in Michoacan and Jalisco; sulphur in many craters; platinum in Hidalgo; cinnabar in Morelos and Guerrero; 'steppe salt' in the sandy districts of the north; 'bitter salt' at Tepayac and other places; coal at various points; bismuth, marble, alabaster, gypsum, and rock salt in great abundance throughout the plateaus and sierras."

In the course of time these mountains have become disintegrated by rain and other natural causes, and the filling up of the spaces between them has formed a series of valleys rich in agricultural resources. These valleys, known as the central plateau, run for about 150 miles (241 kilometers) east of the City of Mexico, in a northwesterly direction. The plateau is so level that when there were no wagon roads in Mexico one could travel in a carriage from the City of Mexico to Santa Fé. In contrast with the plains and the at times barren districts of the plateau, the territory is occasionally broken by depressions called "barrancas," having in some instances a depth of 1,000 feet (305 meters) and being several miles in length. These are covered with a luxurious growth of trees and shrubs and watered by small streams running through the middle of the valley. Among the most remarkable are the *Barranca de Bertran,* on the western slope from Guadalajara to Colima, and the *Mochitiltl,* from Guadalajara to Tepic.

The volcanoes of Mexico are numerous, and they constitute the highest relief of the land. The loftiest of these are: Orizaba (Citlaltepetl, "Star Mountain"); Popocatepetl ("Smoking Moun-

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tain"); Ixtaccihuatl ("Sleeping Woman"); Nevado de Toluca (Xinantecatl); Malinche (Matlalcueyatl); Cofre de Perote (Nauchampatepetl); Nevado de Colima and Volcan de Colima; Cerro de Apisco; and Tancítaro. The first two of these, both resting with one foot on the plateau, might properly be considered as dormant cones, since they continue to exhale from perfectly preserved craters aqueous and sulphurous vapors; they are amongst the most beautifully formed of volcanic mountains. Ixtaccihuatl is manifestly a broken-down and dismantled volcano, having to-day the contour of some of the silenced peaks of the equatorial Andes, such as Antisana; similar wrecks are the Nevado de Toluca (in whose crater is one of the most elevated lakes of the globe) and the Cofre de Perote. Colima is the most active volcano of the land, its eruptions having been almost unremitting for many years. Its position off the plateau, on the Pacific slope, allies it with Jorullo—a mountain of truly Vesuvian proportions, made famous by Humboldt's recital of its terrific constructive eruption of 1759-1763. Heated columns of air still rise from the crater-walls of this forest-clad mountain. The snow-line in the region of the higher summits being about 15,000 feet (3,810 meters), only three of the peaks—Orizaba, Popocatepetl and Ixtaccihuatl—are perpetually snow-clad. Only on Ixtaccihuatl does the ice-cap acquire a development sufficient to form true glaciers.

Climate.

"The odd physical configuration of Mexico gives it many temperatures and three distinct climates, all, curiously enough, within a very few hours' ride of one another.

"The relaxing *tierra caliente* (hot country) begins at the seacoast and extends inward and upward to an altitude of about 3,000 feet (914 meters), with a yearly average temperature of 80°-88° Fahr. (26°-31° Cent.), and an extreme of 100°-105° Fahr. (37°-39° Cent.). The best-known towns lying along this littoral are *Merida, Campeche, Veracruz,* and *Tampiço,* on the Gulf, and *Guaymas, Mazatlan, Manzanillo, Acapulco,* and *Salina Cruz* on the Pacific. The winter climate (December-February) of these places is admirable—likely early May days in the Central U. S. A. —but broken, at intervals, by furious *nortes,* which lower the temperature ten to twenty degrees in a few hours. The summer "dog-days" (*caniculares*) in Veracruz or Guaymas are never so hot as those in New York. The cool land breeze which blows seaward in the morning and returns at nightfall laden with salted ozone and coolness makes life in tropical, white-clad Veracruz, for example, far more supportable than in New York.

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"The *tierra templada* (temperate country) lies between 3,000 and 6,500 feet (914-1,981 meters), with an average all-the-year temperature of 73°-77° Fahr. (22°-25° Cent.); the variation during a season may not be more than 6° or 8°. The finest of the Mexican climates is found between these elevations. The immunity from heavy frosts is as complete as that from extreme humidity, noxious insects, and sudden temperature changes. Dryness is the emphatic quality, with freedom in the dry season (October-May) from malaria, and a perpetual exemption from the keen, cold winds of the higher altitudes and the hygienic deficiencies of the maritime regions. Semi-tropical products thrive side by side with those of the tropics, and there are farms where wheat and sugar-cane grow almost within touch of each other. Certain of the towns in this favored zone are natural, open-air sanitariums, and the warm, still days and cool, sleepful nights are tonics which bring many a sufferer (particularly from tuberculosis) back to health. One of these health stations is *Guadalajara,* with an almost perfect climate, aptly described as "June with October touches." Other towns in this land of eternal spring, noted for a climate particularly suited to invalids fearsome of quick temperature changes, are *Orizaba, Oaxaca, Cuautla,* and *Cuernavaca.* The latter place is one of the most favored winter stations north of the Equator. It is unusually free from cold waves (*ondas frias*) and from brusque climatic changes. The gradation of the seasons is so gentle that the trees take on their new spring leaves while still green with the verdure of the old year.

"The *tierra fria* (cold country)—cold only in comparison to the heat at the coast—rises above the 6,500 feet (1,981 meters) level and extends to snow-line (12,500 feet (3,810 meters) in the tropics); above this the thermometer often sinks below freezing point. The average temperature of the alleged *tierra fria* is 59°-62° Fahr. (14°-16° Cent.), with slight changes, except in winter, when a *norte* may bring a light snowfall to Mexico City and topple the mercury down to 35° or 40° Fahr. (2°-5° Cent). In Toluca and the high mountain towns the thermometer has been known to register 20° Fahr. (—5° Cent.). The rainfall in this cold region is one-fifth as much as that of the temperate zone. In the sunny pockets and sheltered valleys of the *tierra fria* the vegetation is often quite luxuriant.

"Plants will grow on the southern side of a mountain which has snow on the opposite side. The sky over all the zones is noted for its unrivaled blue, and on any winter day he who seeks the sun in the morning will seek the shadows at noon. From the elevated mountain peaks one may look down past the temperate to the torrid zone; from the frozen cone of some volcano to the

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warm waters of the Gulf, embracing in one view all that class of vegetation which thrives between the Arctic Ocean and the Equator.

"The climate of Mexico City is usually mild, but exhilarating; ranging during the year from 35° to 75° Fahr. (2° to 25° Cent.), with a mean temperature of 65° Fahr. (17° Cent.). Excepting in the winter, its greatest variations are generally between day and night on the same day. The tropical heat of the latitude is tempered by the altitude. Throughout the year the nights are delightfully cool, and a pair of heavy blankets are always requisite

CROSSING THE TROPIC OF CANCER, MEXICO.

The Tropic of Cancer divides Mexico into two nearly equal geographical parts, the north temperate and torrid zone sections. A large portion of the hot belt, however, enjoys a very temperate climate, due to the high altitudes of the mountains and plateaus.

to comfortable sleep. During the short winter (December-February) the temperature is apt to be affected by the northers which blow down the Gulf. These monsoons of the western hemisphere sometimes precipitate light snowfalls or hail-storms in the capital, but the snow vanishes with the first touch of sunshine. Rarely a winter day passes without some sunshine, and then one instinctively seeks the shady side of the street.

"The altitude is unsuitable for snakes, scorpions, and similar reptilia. It affects culinary operations, and recipes which give good results at sea-level have to be adjusted to suit the elevation. Food values decrease by one-third, it is said." (Terry's "Mexico.")

The rainy season in Mexico varies according to altitude and relation to coast lines. As a rule, it may be said to begin in May or June and ends in October.

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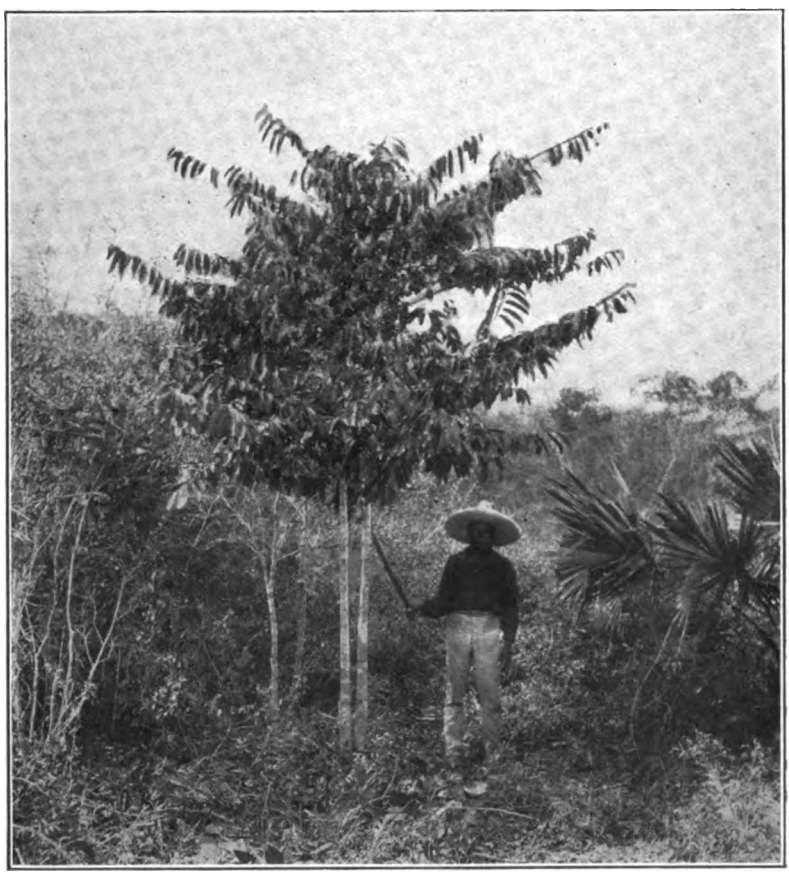
Flora and Fauna.

This country is the ideal holiday place of the naturalist and the student of strange flora. No other country produces such an astonishing diversity of tropical and subtropical fruit—the orange, the banana, the pineapple, the cocoanut, the pomegranate, the guava, the aguacate, the mamé, the membrillo, the mango, the papaya, the zapote and the anona are among Mexican tropical fruits. Its temperate fruits are neither so many nor so good. Among general products that grow well are: Sugar-cane, corn, beans, peas, wheat, rice, cotton, tobacco, rubber, indigo, cacao, coffee, vanilla and agave, from which is obtained the sisal hemp



WILD RUBBER TREE IN THE STATE OF TAMAULIPAS.

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in Yucatan, the beverage "pulque," and other articles of commerce in other provinces of Mexico.

The animal kingdom is almost as extensively represented in the territory of Mexico as the botanical. There are the large felidæ—the puma, jaguar, and ocelot. Wolves, coyotes, and wildcats are numerous in the northern States. A specie of sloth inhabits the southern forests, which also contain several varieties of monkeys. Among the wild animals are beavers, moles, and martens. The armadillo and iguana are very common, and are used by some of the natives as food. Venomous serpents and noxious insects lurk in the forests of the hot lands. The mountains and foothills present a veritable paradise to the sportsman—deer, hare, rabbits, quail, wild pigeons, partridges, and an infinite variety of birds and ground game abounding. Horses, cattle, sheep, goats and pigs are found almost everywhere, and are the source of much wealth and industry.

The birds of Mexico are far famed for their brilliant plumage and singing qualities. In the hot lands the birds are more distinguished for beauty of plumage than melody of voice, their coloring being as varied as that of the flowers; but in the colder belts splendid songsters fill the air with thrilling notes. A list of the feathered inhabitants of the country includes almost 400 species.

Sperm and grayback whales, seals, and sea lions abound in the Western waters of Lower California and in the gulf of that name. The waters of both coasts, as well as the rivers and mountain streams, teem with a great variety of fish.* Alligators are found in the river mouths of both coasts, and turtles of all kinds are abundant. Tortoises exist in the waters of Yucatan and Lower California, as well as all along the Pacific coast, the shell being an important article of export. Near La Paz, in the Gulf of California, extensive beds of pearl oysters exist.

Among insects, those claiming attention are the cochineal (Coccus cacti) and the honey bee, because of the excellent materials they produce beneficial to industry and to commerce. The former insect is cultivated in Oaxaca, living on the prickly-pear cactus, and producing a red liquid dye. Winterbotham, one of the last century's historians, in his history of America, relates that the trade in cochineal by the city of Oaxaca alone in the year 1796 amounted to 200,000 crowns in value.

The bee is to be found all over Mexico, busily producing great quantities of honey and wax.

The silkworm, although comparatively neglected, is said to yield an annual profit of $40,000.

*Since 1891 the Government has devoted much attention to pisciculture. It established fish hatcheries and introduced large quantities of carp, trout, and salmon trout.

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The country offers a vast and rich field to the naturalist and entomologist for the study of the innumerable species of coleopter, there being no less than 77,000 of these catalogued.

Ethnology and Archeology.

Within the area of the original territory of Mexico there were more families of native languages than in all the Western Hemisphere besides; and there were more kinds and grades of culture also. The Seri Indians, of Sonora, are as abject as the Fuegians, while the Nahuatl and Maya speaking tribes of the valley of Mexico and of Yucatan occupied the most elevated position for culture in the New World.

The origin of the Mexican aborigines is involved in that of the American Indians, since within the present boundaries of that Republic are gathered representatives of every zone, from the Apache, an Athapascan, whose principal home is in Alaska, to the tribes of Oaxaca and Chiapas, who are the children of a torrid clime. There are now in Mexico many times more Indians than were ever at any time within the United States domain. In early lists of tribal names there are often several titles for the same tribe, to wit, their own name, by which they call themselves; their place name, as we now mark persons by the town where they live; names, often of contempt, by which a tribe is designated among its neighbors, besides titles conferred through mistakes by ignorant observers.*

These tribes and their ancestors developed their civilization as best they could under the skies and with the natural resources of the country.

In the matter of food, which is the most important consideration of all, the southern Mexicans were happily situated. Since the grade of a people's culture is measured by the amount and variety of artificiality in their daily lives, agriculture is a higher art than fishing or hunting or herding. How fortunate, then, were the Mexicans of old in that their attention was not distracted by the presence of large herds of buffalo or immense schools of fishes. There was in their dietary enough of meat and of fish, but they had the most economic grain in the world—maize—in some places yielding three crops a year. Besides, Mexican soil is congenial to all sorts of peas and beans, most nitrogenous of plant foods; to cacao; to the banana, most economic of fruits, and to a variety of vegetal productions not known in the temperate zone. There were no plows or agricultural machinery; but there was abundance of water supply and ample means of utilizing it through irrigation canals. Could

*For a list of tribes and their present homes, see Appendix, page 314.

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the ancient régime be restored, an interesting picture would be afforded of premechanical thrift. There were farmers in those days such as one might see in busy Japan fifty years ago or yet in many parts of China, where teeming populations are daily fed on ample though not varied fare, the product of human hands alone. The miller—generally the woman—ground the maize on a metate, or slab of lava, with a roller, rather than with a pestle, and cooked her cakes and bread on griddles and in the hot ashes, not differently from the ways of our own ancestors a few generations removed. It was the acme of the hand epoch, where there were fewer comforts, perhaps, but less misery. The serving of food was, like all other activities, conditioned on the social organization. Failing to recognize this, authors have read the most refined habits of dining into the rude but hearty feasting of the Mexican rulers in ante-Columbian times.*

The next anxiety of a people after appeasing hunger is to clothe the body artificially against heat and cold, against rain and drought, and against damage from without. The ancient Mexican wore sandals, which, because they had no rawhide for the soles, were woven or plaited ingeniously from vegetable fibers and fastened to the feet differently from the Egyptian type now worn. On the feet of gods and of great persons the sandals are highly decorated. The limbs were bare. Men wore the breech clout and women short kilts or petticoats. The upper part of the body was protected by means of a shawl or robe fastened on the left shoulder, leaving the right hand free. Sleeved garments were not known. The head ordinarily was bare. In the wilder tribes men and women dressed scantily in garments made of skins. The more advanced tribes substituted clothing of bark cloth, like the Hawaiian tapa, of nequen fiber, and of cotton. Among the most cultured tribes barbaric splendor was the rule in dress. Every part of the body was decked with jewelry, feather work, and embroidery. Of the priests and persons in authority, as one may see from the codices and sculptures, it may be truly said that Solomon in all his glory was not arrayed like one of these. (Bancroft, 1875, 363-377.)

After clothing comes the habitation. Indeed, a house is a suit of clothing or costume for a family, a clan, a royal establishment, a religious sect. Morgan (1881) holds that the great stone structures of Mexico now in ruins were communal houses, built on the models of those belonging to Indian tribes farther north. In this he is combatted by those who look at them after studying the religious edifices of the Orient. No doubt these

*For a gorgeous account of Montezuma's dinner the reader may consult Bancroft (1895, ii, 174-178), and as an antidote to this, Morgan (1881, 237-248), the truth doubtless lying somewhere between.

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imposing remains are only a small fragment of what they stand for. As a stone arrowhead picked up on some field was once united to shaft and foreshaft and feathering, and was painted with significant markings, so these stone remains are only insignificant relics of their former selves, while the wooden buildings accompanying them, with thatched roofs and plaited sides, painted screens, gardens, furniture, and household utensils, are all gone. The ancient people lived doubtless very much as the native Mexicans do in our day. Making allowance for intrusions by way of Spain from North Africa and Egypt, and by way of Manila from the Orient, one may be helped greatly in restoring the former times by a study of modern buildings, not forgetting that the clan system of living prevailed in Mexico as in all other parts of America.

The tools of the ancient stone workers were chiefly of stone. If there were any mason's tools of metal, they were inconsiderable. The Mexican lapidaries could chip, saw, bore, and polish obsidian, nephrite, and other gem stones, and inlay. They were also fond of and skilful in mosaic work, effected by carving masks and other objects in wood or shell, covering the surface with gum and overlaying with scraps of green and other colored stones. (Oppel, 1896, 4.) Excellent examples of this work have been dug from ancient pueblos in Arizona. (Fewkes, 1898, pl. 35.) The ancient Mexican stone masons used the pick, the bushing hammer, and the abrader, all of stone. They also employed wood for skids, levers, wedges, handles to stone tools, and for burning lime. To these primitive utensils must be added that manual dexterity which comes only through generations of practice and emulation. The tools of fellow-craftsmen were of the same primitive character, and yet with these they also produced astonishing results in wood, shell, gold, silver, and copper.

The Mexican engineer had no helpful beasts of burden, hence his countrymen became famous in the use of their backs, an art not yet passed away. He had the best of ropes, the inclined plane, the lever, the wedge, the parbuckle, and a primitive tackle without pulleys. In certain erections a false core was built up to sustain the masonry, and removed when all was finished. As for his line, plummet, foot rule, square, and numerical standards, nothing is known; only, if his measuring system resembled his calendar, he used a decimal scale.

Among measuring appliances, time measures afford an excellent gauge of a people's progress—to mark definite portions of time, as with the sandglass; to tell the time of day, to note the proper day, furnish materials for the chronograph, the chronometer, and the chronologist.

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The more savage tribes of Mexico marked the length of an interval by the fading of leaves set up in the path and the width of the angle traversed by a shadow. Time of day was not registered artificially among the wilder tribes, but in the more cultured there were devices that operated on the principle of the dial. But the calendar of the Nahuatlan, Zapotecan, Totonacan, and Mayan families was quite up to that of the conquerors. The year consisted of three hundred and sixty-five days, in two parts;

CALENDARIO AZTECA O PIEDRA DEL SOL
EN EL MES DE DICIEMBRE DEL AÑO DE 1790
AL PRACTICARSE LA NIVELACION PARA EL NUEVO
EMPEDRADO DE LA PLAZA MAYOR DE ESTA CAPITAL
FUE DESCUBIERTO ESTE MONOLITO Y GRABADO
DESPUES AL PIE DE LA TORRE OCCIDENTAL DE LA
CATEDRAL POR EL LADO QUE VE AL PONIENTE
DE CUYO LUGAR SE TRASLADO A ESTE MUSEO
NACIONAL EN AGOSTO DE 1885.

THE AZTEC CALENDAR STONE OR STONE OF THE SUN IN THE NATIONAL MUSEUM, MEXICO CITY.

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three hundred and sixty days, divided into eighteen months of twenty days each, and five intercalary days. Each day of the the month had a proper name and a graphic symbol. The interpretation of these symbols has taxed the ingenuity of Mexicologists from the beginning. (Thomas, 1898; Seler, 1888.)

In this connection, for rating the culture status of the Mexicans, must not be overlooked the harnessing of nature's forces for work. The Mexicans, originally, did not use the wind for power unless it may have been to waft the rudest kind of craft and to winnow their harvests. But water was dammed up for agriculture and for fish ponds, floating gardens were known, canals were dug for irrigation and transportation, and, most wonderful of all, in Yucatan were innumerable water caves, where the soft, porous limestone, broken up by earthquakes, acted like a sieve for the surface waters, which dissolved for themselves subterranean channels. There are no surface springs, but the roofs of the underground streams, breaking in, formed cistern-like pits, with abundance of water at the bottom. These are approached by trails and ladders, and they have been improved artificially. (Holmes, 1895; Mercer, 1897; Thompson, 1897.)

The woodman was not in evidence to such degree as he became on the North Pacific coast, but all tribes knew the plant world well, and within the limits of the Republic there was a great variety of economic species for aliment, drink and medicines, for woods, for fiber. Timber was cut down with stone axes, split with wooden wedges, held together with wooden pegs and lashings. It was shaped roughly with adzes, and there was no lack of tools for creditable wood carving, as the architectural features of that substance bear witness, but drums and furniture were also skilfully carved. The reed lent itself handily to a thousand clever arts.

The textile art was well advanced in Mexico. Its coarsest products were the roofs of the dwellings, their ornamental walls and screens, and fences. Next came matting of reeds, yucca, and palm strips. By varying the plant, the dye, and the pattern, the most pleasing effects were brought about. Articles of dress and utensils of housekeeping without number were plaited from abundant and varied material. Basketry, through failure of tough roots and other material, was not equal to that farther north; but in place of it skilful fingers reveled in feather work, for which nature furnished with lavish hand not only abundant fiber for network, but plumage birds without stint for the gaudy covering.

The Mexican women could spin both with the fingers without mechanical help, and by means of spindles, upon the manufac-

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ture of which much artistic skill was bestowed. They wove just as the Pima women of Arizona, their kindred, do even to this day, namely, sitting on the ground with warp almost horizontal, one end of it fastened to a stationary object, the other to a belt around their waists. By swaying their bodies they governed the tension. They could do plain weaving, in which the weft of different colors passes back and forth; they could manage design effects by counting warp threads at each excursion of the rude shuttle, or they could produce tapestry effects by weaving in the patterns separately. On the surface of these, textile lace work also was skilfully effected. It is an open question, however, whether the beautiful modern drawn work was of native development or imported from Manila in the sixteenth and seventeenth centuries. Tailoring, also, in the modern sense was unknown, garments being made out of the whole piece.

The question whether Mexican aboriginal culture is original or derived has been hotly debated by those who should have known that it is both. The problem of native culture is like those of the geologist and the chemist. In order to ascribe a phenomenon to certain layers or substances, these first exclude foreign intrusions. In the same way those arts which were developed on the soil of Mexico will be more clearly understood by the elimination of intrusions. From the crown of his head to the sole of his feet—literally, from headdress to sandal—the modern Mexican is Hispano-Egyptian through northern Africa, with an overlapping of the Orient through three hundred years of contact with the Philippines.

There was no potter's wheel; all vessels were being built up by the well-known processes of coiling, modeling, molding, and malleating or beating into shape with paddles. The art of covering with slip, painting, adding ornaments, and burning were well understood, but glazed pottery in ancient Mexico was not known. In the South the ware was far more refined in quality and ornament, that of the central region being overloaded with modeled work. Indeed, in the ware of to-day a school of potters, instead of modeling as the sculptor does, molds the parts of an intricate piece and then lutes them together. Among ceramic treasures are to be noted the musical instruments.

Gold, silver, copper, and perhaps tin were known to the cultured provinces. These metals are still found in the Republic abundantly, but to reconstruct the workshops of the goldsmith or the silversmith is no easy task. Astonishing effects may be produced in these metals, cold or in open fire, in the hands of clever workmen. Those who on *a priori* ground assert the knowledge of the blowpipe, the bellows, or the knowledge of fluxes do not remember how extremely handy many peoples are without them. Literature concerning the metallurgists, their

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shops, their tools, their processes, and their handiwork, is most meager. (Peñafiel, 1890.)

In commerce and transportation the apotheosis of human backs and limbs was to be seen in Mexico of old, and in this day they compete successfully against beasts of burden and the iron horse. Mothers bore their children in their garments, the climate being too hot for the cradle board of the North. Passengers were carried on human backs in frames. Loads were packed and held in place both with headbands and breastbands. The commonest picture in some of the paintings is of the burden bearer, and the artist has not despised the carrying strap as a ground for pleasing designs. Runners were common, and relays, so that messages and perishable goods could be delivered quickly. The Mexicans were not skilled on the water. In their almost harborless and riverless country necessity for elaborate water craft did not exist. What little flotation was demanded rafts of reed and logs and dugout canoes supplied. In the more thriving States organized transportation, centers of distribution, and standards of value were established, but the nearest approach to money was in the shape of cacao beans, quills filled with gold dust, and small sheets of copper stamped with simple design. (Bancroft, 1875, 378-399.)

For the communication and record of ideas the tribes of Mexico exhibit an interesting progression. The Sonoran branch of the Nahuatlan family were in this regard Indians pure and simple, with their spoken dialects, gesture speech, telephonic messages, painted robes, rock carvings, and symbolism. But the Southern families were far beyond that. They had no spelling books and printing presses, but they had gotten as far along as the rudest hieroglyphs of Egypt and Mesopotamia; certainly were as skilful as the Chinese. They had books much like those of Eastern Asia, written on parchment or native paper in narrow pages and folded like a Japanese screen, and they engraved their thoughts on stone. The literature of the cultured Mexican tribes—that is, the artistic writing—has nearly all perished, but there was a professional class of scribes, and after the conquest they copied for their rulers many old documents and prepared new ones, some of which remain unto this day. To the decipherment of these and of the intricate calendar system able scholarship has been devoted, and there is room here merely to refer to their researches. (Bancroft, 1875, ii, 508.) Seler says, "The supposed differences between Aztec hieroglyphics and Maya manuscripts do not exist." (Proc. Roy. Geog. Soc. in Science, 1889, xiii, 295.)

Among these preserved picture writings are a number of sufficient importance to have absorbed the attention of eminent and enthusiastic scholars. They are called "codices," and they have

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THE SACRIFICIAL STONE
In the National Museum, Mexico City.

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been named from their discoverers, from their present locations, and from some historical fact connected with them. (Bancroft, 1875, ii, 529; 1876, v, 192.) The word codex, or codice, is somewhat confusing in this connection, being made to cover also old documents in the Spanish language as well as paintings relating solely to the conquest. Since the appearance of Lord Kingsborough's work and others mentioned by Bancroft, the Mexican Geographic Society, Duc de Loubat, Thomas, and others have given to the world entire codices or parts in excellent form. Government and institutions have liberally aided. Besides the codices there were mural inscriptions, calculiform characters on altars, monoliths, cartouches on ornaments, paintings on pottery, and glyphs on hard wood. (Starr.)

The social organization of the aboriginals in Mexico is one of the most excellent fields of research on account of the perspective which it presents. Here, in this limited area, are to be seen every grade and variety of the tribe system. On one extreme is the well-known mother rule, where descent is in the female line and there is little of private property or privilege; on the other is the picture of a great military confederacy of tribes, wherein father-right prevailed, where officers were elective, and a council of delegates from each tribe was charged with all affairs of state. Into this truly American social order it was easy for the early Spanish authors to read their own system and to use such terms as king, prince, general, and so on, but to the careful student the organization and functioning of society are explicable through a wider study of various peoples on the Western Hemisphere. Besides, there were, as has been pointed out, several linguistic families in Mexico, who were as wide apart as Aryans and Magyars in Austria-Hungary; but even these had their agreements and treaties according to the plan of democracies. (Bandelier, 1880, with rich addition of footnotes.) Confirmatory of the thoroughly American tribal system of government and social order in Mexico are the facts relating to the holding of real estate. It is not necessary to appeal to the tribes north of the Tropic of Cancer; in the more highly cultured tribes, as Bandelier shows with great erudition (1878), no man owned any real estate, no office owned land, all government land was independent of the rulers, conquest was never followed by partition of land, the notion of ownership in fee, of sale, barter, conveyance, or alienation was undreamed of.

The organization of the army was not different essentially from that of their civil government. As in the Old World so in the New, there were storm centers where clouds of war met and spent their fury. The valley of Mexico was one of these; hence the Nahuatlan tribes attained the highest point of military discipline of the New World. But their weapons were only bows

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and arrows, darts, throwing-sticks (atlatl), javelins, and spears, for piercing; slings and clubs for striking; and the most murderous club, lined on either side with clips of volcanic glass, for slashing. For defense they had shields, cotton armor, and wooden helmets, like those of the Thlinkit warriors in recent times. As is customary among the northern Indians, the Mexican soldiers decked their military equipments with gorgeous featherwork.

The organization of the army, the tactics, the strategy, the military engineering, the fortified places of the more civilized tribes, doubtless were of a higher order than the guerrilla methods of the United States tribes of two hundred years ago. On the other hand, they err who would read into these a vocabulary of European war methods of the times. Bandelier says (1877, 161): "The Mexicans were not subject to a despotical power, but organized after the principles of a barbarous but free military democracy."

In the comparative sense, religion consists in what men think of a spirit world and what they do in consequence; the former is their creed, the latter their cult or worship. Creed has to do chiefly with the personnel and physiography of the spirit world, and it will be noted that in some measure that world is the reflection of this. Its supernal beings are organized as a society, and their motives as well as their conduct have reference to human beings.

In cult, human society is organized, buildings are erected, costumes are worn, food is eaten, days are observed, and certain austerities practiced, all with reference to beings unseen to mortal eyes, but cognizable by a special sense. The most refined art and music and the best of everything go to the gods.

On this definition the Mexican religion had its creed and its cult, its heaven and its pantheon, as well as its temples, altars, and priesthood; its mythology and worship.

The northern or pueblo tribes of Mexico must be studied in the light of the pueblo tribes of Arizona, worked out by members of the Bureau of American Ethnology. Its wild tribes lived near to their unseen world like their brethren of the north. We are here concerned with the religion of the southern families. Bancroft (1875, iii) devotes five hundred pages to the religion of the Pacific coast tribes; the larger part is given to the topic here considered. On every monument, sculptured slab, decorated wall or vase, the spirit world is manifested. It is a Mexican Pantheon. The warrior god is supreme; the priests are ministers in a church militant. Sacrifice, incense, pomp in worship, revolting rites, prolonged rituals, obtrude themselves and override industry and art.

The esthetic side of Mexican life in aboriginal times covered

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a wide area, but nowhere reached an enlightened stage. There were public fêtes and games, but there was no drama *per se.* There were social rules or fine art of behavior—in the open, in the family, at the feast, every one had a place; but behavior where there was so little furniture scarcely rose to etiquette. There was fine art of dress and its accessories, but not far above that of the Mandan Indians. Vocal music was singing in unison, and there are those who say that the Mexicans had a scale of notes which can be reproduced on an organ with fixed pipes, but this is denied. The musical instruments of the Mexicans were flageolets and flutes of wood, bone, and pottery. Whistles of grotesque shapes, reed instruments of unique form, drums of wood (teponaztli), and with heads of membrane (huehuetl), rattles (ajacaxtli), and bells (yotl), but the existence of stringed instruments is doubtful. In some of the sculptures students see representations of this class, but others as clearly witness the notched rattle. (Seler, 1898.)

As for the graphic and glyphic art, sculpture, and architecture, the student can not fail to note everywhere the sense of the beautiful struggling to help symbolism and to discharge itself from its more childish forms. Unity, proportion, symmetry are all there, and some of the world's standard forms have been reached. One well qualified to judge has said: "Most of the motives employed in embellishment have their origin in religion; their use was first significant and second esthetic. * * * All the sculptor's art is crude as compared with civilized art, but it is virile and full of promise of higher achievement. * * * There is lack of perspective and a mixing up of sizes, and the general style of presentation is suggestive of that of the ancient Egyptians." (Holmes, 1895, 52.)

No other part of the Western Hemisphere has such abundance and variety of attractions for the archeologist as the territory of the Republic of Mexico. It is not necessary to maintain that the sculptors of southern Mexico were the immediate blood kindred and colinguists of all these widely scattered tribes, but they did use the same alphabet and art motives. The Mexicans were mound builders, totem carvers, pueblo designers, fretwork weavers, and costumers in stone, the material which, more than all others combined, evoked the virile qualities of early races.

The mural remains of the Republic are comprised within narrow limits, extending from the sixteenth to the twenty-second parallel, from Soconusco to Quemada. Yet in this contracted area are to be found more structures of stone than in all America besides.

Of this architecture there are held to have been several schools. Indeed, this should be looked for, since, in addition to the natural opportunities opened by the several environments, there were on

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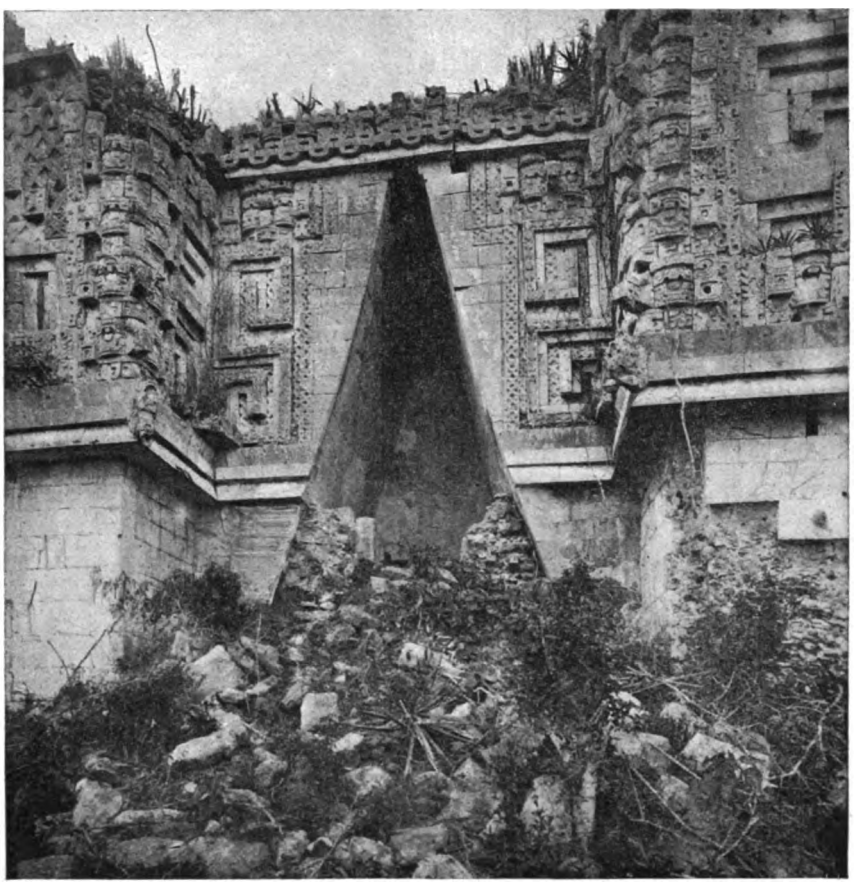
this territory, in rivalry, several linguistic families. In Yucatan and Tabasco was the Mayan family, with an outlying branch in northern Veracruz. Next to them, westward, were the Zapotecan and the Zoquean family, and in a circle about the City of Mexico were Nahuatlan, Totonacan, Otomian, and Tarascan tribes.

Every variety of material enters into the permanent building,



PEABODY MUSEUM COLLECTION

RUINS OF UXMAL, STATE OF YUCATAN.

TRIANGULAR ARCH, WEST FAÇADE OF THE GOVERNOR'S PALACE.

At the angles of these arched gateways are hideous masks, one over the other, the projecting trunk being in the place of the nose. Ornaments are carved on either side of the arch, while the cable or rope decoration is also used. These gateways are no less remarkable for their novelty of design than for their beautiful workmanship.

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to wit, the plain dirt heap, the modeled dirt heap or mass; even mountains were remodeled; sun-dried clay, either as bricks or in larger masses; stone and clay or other bonding material, mixed in rubble, used in vast quantities; walls faced with uncut stone, which in some localities was supplied by nature in good form; cut stone in walls laid up without adhesive material; stone walls laid in clay, mortar, and cement; carved architectural features; relief carvings; sculptures in the round. As for the adhesive substances, besides clay and other natural cements, lime mortar has been mentioned and the possibility of its existence denied, but caustic lime was not beyond the Mexican builders, since burnt shells occur universally in American pottery. There was no lack of durable wood to serve as lintels to doors and to support ceilings. This material, doubtless, was used for doors, partitions, screens, and interior decorations, and was cut, hewn, and carved with great skill.

The architecture was oversolid, and consisted of rough masses of dirt and rude masonry, faced with smoothed cut stone. Lyard encountered just this combination in excavating Nineveh. A recent investigator calls attention to the lack of the best elements of construction. (Holmes, 1895, 27-30.) The arch and the dome were unknown. Long pentagonal openings, with horizontal bases, called false arches, were the best that the architect could do. On this overmassive structure there was an equally barbaric excess of decoration—false fronts, roof combs, cornices, mosaic and stucco work. One imposing feature is the terrace and stairway presented in endless variety, affording not only access to superior structures, but sitting room or grand stand for the laity.

The two central features about which all plazas, paved ways, banks of earth, and walls or parapets cluster are the pyramid and the squared structure, the mound and the log house made in stone. Of the former, the function is largely outside; of the latter, owing to the solidity of the walls, it is only partly inside. The pyramid may have additions interior and inferior, but its attractive parts are exterior and superior. The built-up and squared structure lends all its parts, indeed, to the architect, the modeler, and the sculptor, but it also was to be gazed at from without. The pyramid was divided into stories by placing a series of truncated pyramids one above another and by cutting out terraces from a single form.

In the most important remains there is such evident relationship between structure and structure as to prove that one purpose runs through the whole. And while some great buildings give evidence of accretions, others, for example the palace at Uxmal and the castillo at Chichen—show that when the building began the whole plan, to the minutest detail, had been

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thought out. Very few of the buildings are accurately oriented, as that term is commonly understood. Certainly the modern style of laying off cities in rectangles was as little known in Mexico as among the European contemporaries.

Their purposes are easily harmonized with the environment, the kinship system, and the culture system of the peoples. Some of them are forts, to defend whatever was in them. Some of

(PHOTO BY MAUDSLAY)

RUINS OF CHICHEN ITZA, STATE OF YUCATAN.

PORTAL OF THE TEMPLE OF THE TIGERS BALL COURT.

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them were religious, with their court of the women, court of the laity, and the other societies, court of the society and pathway of the priests to a kind of shrine or holy of holies. If only on some bright, sunny day the pageant could return, what a picturesque sight one of those temple structures would afford, having every terrace and stairway filled with gay costumes, to which gold and silver and precious stones, the efflorescence of the fields, and the plumage of birds lent their willing service.

For the first time the sites of archeological remains in Mexico are here codified in the alphabetic order of States. Such a provisional list will serve future investigators as a starting point for additions and corrections. A distinction should be made between relics and remains. The former are movable and personal, and can not always be relied on for locations, but remains are stationary and are useful on the spot. They should be guarded with the greatest care both by the Government and by public spirit against destruction or removal.*

History.

A mist of fable envelops the early history of Mexico. Scientific investigation and archeology have not yet disclosed the original inhabitants of that country. Ruins and hieroglyphics in different portions of the Republic reveal the story of a series of immigration from the north toward the south, but the point from which the movement began has not been determined.

Mexican historians generally agree, founding their theories on the interpretations of hieroglyphics and upon the ancient ruins, that the country was invaded, after its original settlement, by seven families—Sochomilcos, Chalcas, Tepanecos, Tescucans, Tlatluicans, Tlascalans, Mexicans or Aztecas, in that order† successively migrating from the north, all speaking the same language, the *Nahuatl* or Mexican; but history does not reveal the starting point of these races nor disclose the mystery of the multiplicity of languages of so diverse a character spoken by the many tribes that followed them, nor the causes that impelled them to abandon their former homes.

It is necessary, however, if one wishes to understand modern Mexico, to say a few words about each of the chief Indian tribes which, occupying the country in prehistoric times, persist to this day with strongly individualized ethnical characteristic.

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*The List of Ancient Remains is given in the Appendix, page 318.

†Edward Seler (Gesammte Abhandlungen zur Amerikanischen Sprach-und Alterthumskunde, Zweiter Band, p. 32, A. Asched, Berlin, 1904), gives a more expanded list of tribes related to the Aztecs in their entrance into Mexico, viz.: Uexotzinca, Chalca, Xochimilca, Cuitlanaca, Malinalca, Chichimeca, Tepaneca, Matlatzinca.

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The first tribe to establish a settled and fairly civilized polity were the *Mayas,* who founded cities and raised stately temples, the ruins of which to this day command the admiration of travelers and archeologists, in the Peninsula of Yucatan, where they are supposed to have arrived from some region in the north, during the third century of the Christian Era. Their descendants in the State of Yucatan at the present time form one of the most intelligent groups of the indigenous population of Mexico.

The *Otomíes* are found occupying in the seventh century an extensive region in Central Mexico, coinciding with the present States of San Luis Potosi, Guanajuato, Michoacan, Mexico, Querétaro, Morelos, Tlaxcala, Puebla, part of Veracruz and Hidalgo. Their civilization was of the most primitive description. Their descendants are numerous to this day in the States mentioned, and in the more remote districts the Otomí tongue is used by them to the exclusion of Spanish.

The same territory that had been occupied by the Otomíes was overrun in the seventh and beginning of the eighth centuries by the *Toltecs* (Toltecas), a much more advanced race than the Otomíes. The Toltecs established their capital at Tollan, identified with the present town of Tula, and to them are attributed the structures of which the interesting remains may be examined at Teotihuacan and Cholula.

The annals of the Toltecs have furnished a starting point for the history of Mexico. They composed a semi-civilized nation inhabiting a country called Huehuetlappallan, toward the north of the continent, where they built cities and temples and were versed in agriculture, the arts and the computation of time. Owing to civil disturbances, the Toltecs, with a number of their neighbors, were expelled about the middle of the sixth century from their country and began their wanderings southward, founding cities on their way. One hundred and more years later they reached the site of Tula above mentioned, where they laid the foundation of their powerful kingdom. This tribe remained here until overthrown by the "lords of Jalisco" (the Chichimecas) in 1116, eleven monarchs having reigned.

There is a notable event in the history of the Toltecs which deserves mention, as it is well authenticated. It is the origin of the famous Mexican beverage *pulque* in the reign of the eighth Toltec chief, Tepaucaltzin, in the latter half of the eleventh century. It is narrated that a noble named Papantzin discovered the method of extracting the juice of the *maguey* plant, of which *pulque* is made, and sent some of the fermented liquid to his chief by the hand of his daughter, the beautiful Xochitl, called the flower of Tollan (Tula). The chief, enamored both of the drink and of the maiden, retained the latter a willing

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prisoner, and she became the mother of his son, who afterward wielded the scepter. This incident inaugurated the troubles of the Toltecs.

After the disposition of the *Toltecs,* a roving tribe, the *Chichimecas,* occupied the abandoned country. They were inferior to their predecessors in the arts of life, but were a warlike people, who, even after the conquest, gave the Spaniards much trouble.

Other members of the great Nahuatlan family, the original seven tribes of which descended from the north, then spread themselves over the valley of Mexico, founding cities and erecting temples and palaces.

The last tribe to reach the valley was the *Aztec,* or *Mexican,* whose annals claim the greatest interest in the history of Mexico. This tribe is supposed originally to have come from the north of California, according to the historian Clavijero, their country being called Aztlan. They reached Tula in 1196, remaining there nine years, and spending eleven in other parts of the valley. At the expiration of this time they arrived in Zumpango, thirty miles north of their future capital. Here they were well received, and the son of the local chief married the daughter of one of the newly arrived Mexican families. From this marriage sprang the military chiefs of the Mexicans.

After many wanderings they settled on the marshy islands near the western borders of Lake Texcoco, and there, in the year 1318, was established the nucleus of the city first called Tenochtitlan, derived, according to some authorities, from Tenoch, one of their priests and leaders. Other authorities claim that the name comes from *Tenuch* (prickly-pear cactus), as the legend runs that their tutelary gods had signified their will that the tribe should select a permanent home, and had decreed that they were to fix it on a spot where the chieftains should find an eagle perched on a *nopal* (prickly-pear) devouring a serpent. Two of their leaders were commissioned to go forth in search of the sign, and they wandered in every direction until, on arriving at a spot in the midst of the marshes which then covered most of the valley, they witnessed the predicted augury. This became the site of the City of Mexico.

The present name of the city (first called Tenochtitlan, as mentioned above) finds its source in the name of the Aztecs' god of war *Mexitli,* also known as Huitzilopochitli. The name of the country demonstrates the hold the maguey plant had upon the ancient tribes. Mexican traditions, as preserved in the most ancient writings, relate that this god was born of a virgin belonging to the noble family of Citli (free and ancestral); that his cradle was the heart of the maguey plant (*metl*), and hence

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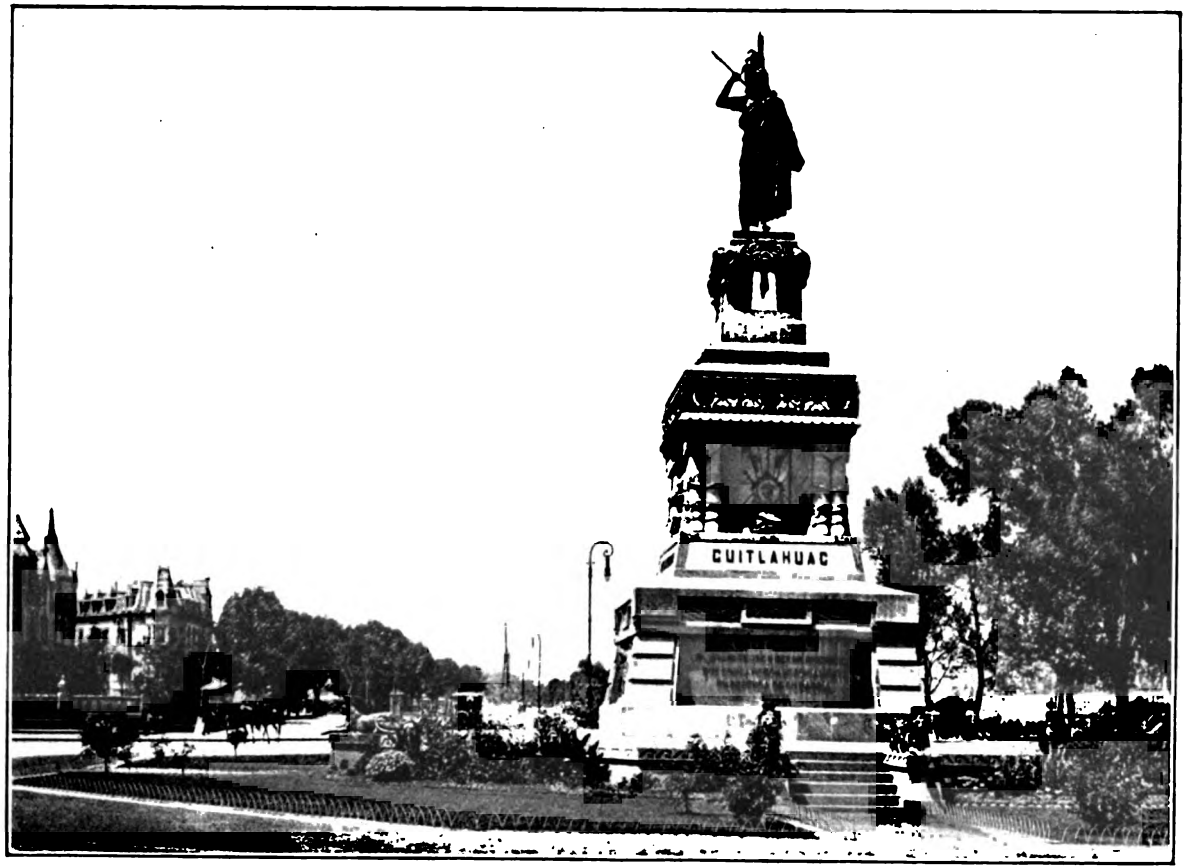

STATUE TO THE LAST AZTEC EMPEROR CUAUHTEMOC IN THE "PASEO DE LA REFORMA," MEXICO CITY.

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the name of *Mecitli,* afterwards changed into *Mexitli,* and finally into Mexico.

Here the Aztecs constituted their first government, which was theocratic and military, under Tenoch, who died in 1363. Ten kings followed, during the reign of which the Aztecs devoted themselves to the arts of peace and built a fine city, connecting it with the mainland by four causeways.

Among the rulers were the first Moctezuma, more properly Motecuhzoma, known also by the name of Ilhuicamina, accounted the greatest of the Aztec sovereigns. He extended the sway of his people, and carried their arms as far south as the city of Oaxaca. His grandson, the next king, Axayacatl, who is credited with the construction of the great monolith known as the Calendar Stone, died in 1841, leaving two sons and one daughter. The elder of the sons, Motecuhzoma, or Moctezuma II, as he is commonly known, finally ascended the throne. It was he who received the first announcement of the appearance of the white man on the shores of the Gulf of Mexico, and whose fate decided the end of the Aztec empire. The last of the Aztec monarchs was the nephew of Moctezuma II and son of his sister Tilalcapatl. His name was Cuauhtemoc.

Cortes cast anchor off the island of San Juan de Ulua, in Veracruz harbor, the evening of Holy Thursday, and disembarked on the following day, which was Good Friday, April 22, 1519 (Old Style*), and in two years, August 13, 1521, had captured the City of Mexico and unfurled the flag of Spain over the palace of Moctezuma.

Under the name of New Spain, Mexico was ruled from 1521 to 1821 by a succession of governors, royal commissioners (*audiencias*), and viceroys,† the last of whom, Juan O'Donojú, did not assume control.

During the administration of the first viceroy, Don Antonio de Mendoza, who ruled from 1535 to 1550, and exerted himself in behalf of the Indians, discoveries were actively prosecuted in the north, the first money was coined in Mexico, and the first printing press in the New World was introduced (1536).

The second viceroy, Don Luis de Velasco, also labored for the good of the Indians. During his administration the University of Mexico was formally opened (25 January, 1553, according to imperial cédula of 21 September, 1551), and the City of Mexico suffered its first inundation since the conquest.

Don Martin Enriquez de Almanza was the fourth viceroy, and his term is famous for the fact that in it the Inquisition was

*The New Style, or Gregorian calendar was established in 1582. According to the Old Style calendar used during Cortes' time, Good Friday in the year 1519 fell on April 22.

†A list of Viceroys is given in the Appendix, page 327.

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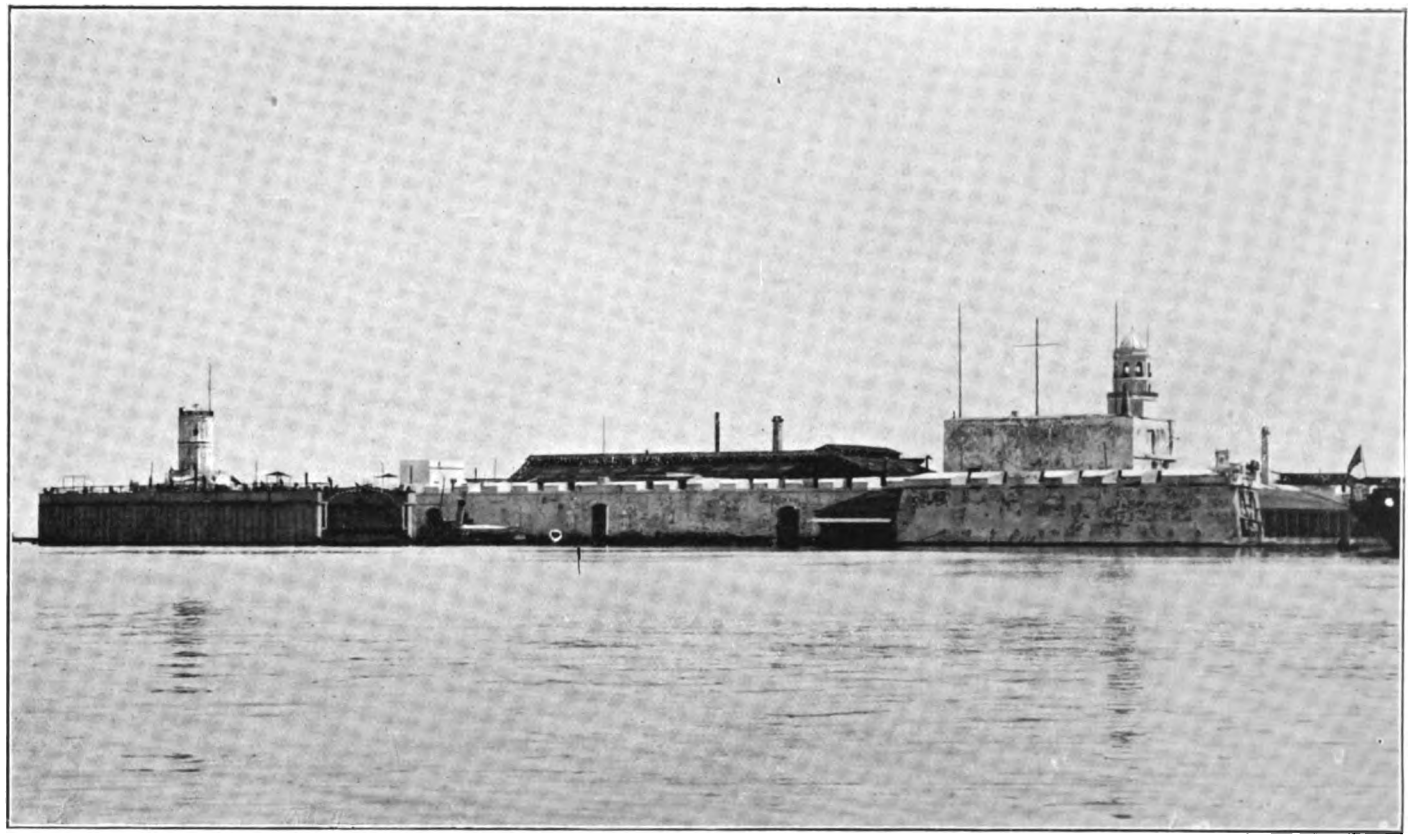

Fort of "San Juan de Ulua," Port of Veracruz.

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established in Mexico (1571), and the first stone of the present cathedral was laid (1573).

Don Luis de Velasco, the eighth viceroy, son of the former viceroy of the same name, was a wise ruler who did much to protect the Indians and to beautify the capital. He laid out the Alameda, and during his second term of office he presided at the formal beginning of the great drainage cut (November 28, 1607, *el tajo de nochistongo*) by turning the first shovelful of earth.

The ninth viceroy, Don Gaspar de Zúñiga y Acevedo, was the Count of Monterey. He pushed the exploration in the north and along the coast of California, the Monterey in California and the Monterrey (founded in 1600), the capital of the present State of Nuevo Leon, being named after him.*

In 1606, while the Marquis de Montes Claros, tenth viceroy, was active, work was commenced on the aqueduct which, until within a comparatively recent time, conveyed the waters of the Chapultepec springs to the capital.

Francisco Fernandez de la Cueva, the twenty-second viceroy (1653-1660), had the title of Duque de Alburquerque. In the last year of his reign he founded a colony of one hundred families in New Mexico, giving to the city thus formed his titular name—now corrupted into Albuquerque.

The cathedral of the City of Mexico was dedicated in 1667, under Don Antonio Sebastian de Toledo, Marquis of Mancera, the twenty-fifth viceroy. He had the misfortune to experience an eruption of Popocatepetl, and he took measures to protect the Gulf coast against that formidable buccaneer Henry Morgan.

Don Juan de Acuña, Marquis of Casa Fuerte, the thirty-sixth viceroy, 1722 to 1734, was the first Creole to hold office; he was a native of Lima, Peru. During his viceroyalty the first newspaper in the colony appeared in 1722, *La Gazeta de Mexico,* a small single sheet. This was continued until 1807, and its files are exceedingly valuable to the student of Spanish-American history.

The forty-fifth viceroy, Don Antonio de Bucareli y Ursúa, was a beneficent ruler, who embellished the capital, laying out the drive which still bears his name, and, in reorganizing the finances of the country, brought about the coinage in the Mexican mint of no less a sum than $127,396,000.

Don Bernardo de Galvez, the forty-eighth viceroy, was beloved of the Mexicans, and is regarded as having been one of the best of the rulers. He cleared the Gulf of Mexico of buccaneers and constructed the palace of Chapultepec.

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*Monterrey, with two *rs*, is now the official spelling of the Mexican city.

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PULPIT IN THE CHURCH OF SAN FRANCISCO, STATE OF TLAXCALA.

This is the first pulpit from which the gospel was preached in America (about 1520).

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The next viceroy, Don Juan de Vicente de Güemes Pacheco de Padilla, second Count of Revillagigedo, is accounted to have been the best of the Spanish viceroys. He was a famous reformer and corrector of abuses, who cleaned, paved and lighted the principal streets of the City of Mexico, organized an efficient police force, protected art and literature, and took active interest in popular education. Innumerable anecdotes are told of him, and especially of his fondness for going about the city incognito to satisfy himself that the officials were discharging their duty properly. After him was named the *Calle de Revillagigedo,* which he transformed from a blind alley ending against a nest of hovels, into the fair, wide street, running south from the Alameda as it does to-day. During his office, in 1793, the first census of New Spain was taken, and the population was declared to be 4,483,569.

The College of Mines, which is still standing and yearly graduating talented men, although the building itself has recently been closed, was founded by the fifty-second viceroy, the Marquis of Branciforte. Construction was begun in 1797 and finished in 1813.

The unfortunate Licenciado Verdad, who really was the first to declare the independence of Mexico, was treacherously put to death October 4, 1808, during the term of Don Pedro Garibay, the fifty-sixth viceroy. After that event Spanish rule grew weaker and weaker, and the history of the viceroys becomes merged into that of the struggle to throw off the yoke of Spain. The last one—the sixty-first—to be appointed, in 1821, did not assume control.

The modern history of Mexico and the commencement of the almost continuous internecine wars may be said to date from the "grito de Dolores" on the early morning of the 16th of September, 1810, by the parish priest of Dolores, Don Miguel Hidalgo y Costilla, who gathered about him many trusty followers under his banner to the cry of: "Long live religion! Long live our Most Holy Mother of Guadalupe! Long live America, and death to bad government!" This cry is what is known as *el grito de Dolores.*

Several efforts to cause a rebellion against the Spanish authorities had been made since 1798, during the incumbency of the forty-fifth viceroy, Miguel José de Azanza, but they were all suppressed.

Hidalgo marshaled a considerable force and was victorious in several engagements, but he and his lieutenants—Allende, Aldama, and Jimenez—were captured and put to death in 1811, the first on the 31st of July and the three last-named on June 26. The bullets that crashed through these patriotic breasts terminated the first stage of the war for independence.

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HOUSE OF HIDALGO. DOLORES HIDALGO, STATE OF GUANAJUATO.
This house was occupied by Hidalgo when the Independence of Mexico was declared by him.

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One of the greatest figures in Mexican history then came to the front, José María Morelos y Pavón, the parish priest of Carácuaro (State of Michoacan), who by his audacity and military sagacity was accorded a positon at the head of the leaders of the cause of independence. After many notable engagements, in which he was almost always victorious, he captured Acapulco on April 12, 1813, thus ending his second campaign. On the 14th of September, 1813, in the town of Chilpancingo (capital of the State of Guerrero), the first Mexican Congress was installed, which two months later (November 6th) issued the declaration of independence and decreed the emancipation of the slaves. The first provisional constitution was adopted October 22, 1814.

Morelos was eventually overcome by being betrayed by a deserter from his ranks named Carranco, was taken to Mexico, tried, and sentenced to be shot. The sentence was carried out at San Cristobal Ecatepec (State of Chiapas) on the 22d of December, 1815.

But the cause of independence was still sustained by many leaders in different parts of the Republic, among them being Francisco Javier Mina, a Spanish officer, who resolved to do battle for the independence of Mexico. He disembarked at the port of Soto la Marina (State of Tamaulipas) on April 15, 1817, with 500 men recruited in the United States, and marched rapidly into the interior, gaining many victories. He was apprehended at the ranch called Venadito, three leagues from Irapuato (State of Guanajuato), and was shot the 11th of November, 1817. Many other patriot chiefs arose to lead the independent movement. Among these was Guerrero, who, after many hazardous exploits and brilliant achievements, finally, on the 10th of January, 1821, held a conference with Agustín de Yturbide, brigadier-general in command of the Royalist forces, at Yturbide's request, and the two leaders agreed to proclaim independence. The latter proclaimed what is known as "The Plan of Iguala," from the town of that name in the State of Guerrero, on February 24, 1821.

Yturbide, then assuming command of the forces, marched on Mexico, making Valladolid (now Morelia, Querétaro), and Puebla capitulate on the way. On reaching Mexico the Viceroy Apodaca was deposed July 5, 1821.

The sixty-first and last viceroy, Juan O'Donojú, arrived at Veracruz on the 30th of July, and, upon hearing of the condition of affairs, issued a proclamation and entered into communication with the independents. Yturbide went to Córdoba, where a conference was held, resulting in the treaty of Córdoba, which, with slight modifications, confirmed the plan of Iguala, and the date on which Yturbide made his triumphal entry into the cap-

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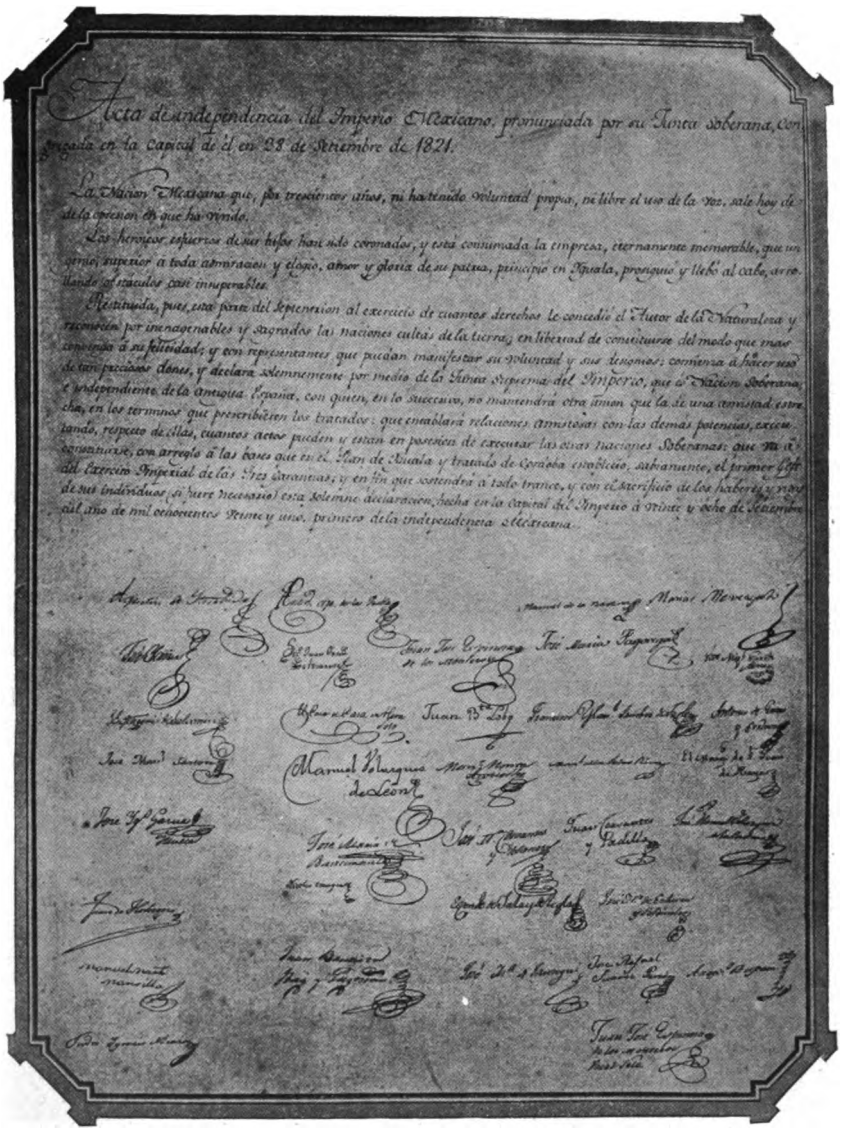
Acta de independencia del Imperio Mexicano, pronunciada por su Junta Soberana, congregada en la Capital de él en 28 de Setiembre de 1821.

La Nacion Mexicana que, por trescientos años, no ha tenido voluntad propia, ni libre el uso de la voz, sale hoy de la opresion en que ha vivido.

Los heroicos esfuerzos de sus hijos han sido coronados, y está consumada la empresa, eternamente memorable, que un genio superior á toda admiracion y elogio, amor y gloria de su patria, principió en Iguala, prosiguió y llevó al cabo, arrostrando obstáculos casi insuperables.

Restituida, pues esta parte del Septentrion al exercicio de cuantos derechos le concedió el Autor de la Naturaleza y reconocen por inenagenables y sagrados las naciones cultas de la tierra, en libertad de constituirse del modo que mas convenga á su felicidad; y con representantes que puedan manifestar su voluntad y sus designios; comienza á hacer uso de tan preciosos dones, y declara solemnemente por medio de la Junta Suprema del Imperio, que la Nacion Soberana, é independiente de la antigua España, con quien, en lo sucesivo, no mantendrá otra union que la de una amistad estrecha, en los terminos que prescriben los tratados: que entablará relaciones amistosas con las demas potencias, exceptuando, respecto de ellas, cuantos actos pueden y estan en posesion de executar las otras naciones Soberanas: que asi lo comunicará, con arreglo á las bases que fijó el Plan de Iguala y tratados de Córdoba el Sr. Don Juan de Dios Odonojú, subsanante, el primer Gefe del Exército Imperial de las Tres Garantías; y en fin que sostendrá á todo trance, y con el sacrificio de los haberes y vidas de sus individuos, si fuere necesario) esta solemne declaracion, hecha en la Capital del Imperio á Nueve y ocho de Setiembre del año de mil ochocientos veinte y uno, primero de la independencia Mexicana.

FACSIMILE OF THE ACT OF INDEPENDENCE OF THE MEXICAN NATION.

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ital, 27th of September, 1821, the Spanish power in Mexico, which had lasted three hundred years, closed forever.

The second Mexican Congress, the first after securing independence, met on February 24, 1822, and elected Yturbide Emperor on the 19th of May of the same year. He was crowned and anointed with great pomp and ceremony in the cathedral of the capital on the 21st of June following as Agustín I, Emperor of Mexico. His reign was short. The people who had been warring so long could not settle down to peaceful pursuits. Ambitious leaders thirsted for high places, and the smoke of the battle for independence had scarce lifted before General Santa-Anna headed a revolutionary movement in Veracruz, proclaimed a republican form of government, and compelled Yturbide to abdicate and leave the country. He became desirous to revisit it, and, returning to Mexico, was arrested immediately upon disembarking, taken to Padilla (State of Tamaulipas), brought before the legislature of Tamaulipas in session there, and by that body condemned to death. He was shot July 19, 1824, just five days after landing.

The Federal Republic was established on the ruins of the Empire. The third Mexican Congress assembled November 7. 1823, and proclaimed on October 4, 1824, a republican constitution, which was patterned closely upon that of the United States. The first President of Mexico, the patriot Gen. Guadalupe Victoria, took the oath of office on October 10th. Congress was dissolved December 24, 1824, and the first constitutional Congress convened January 1, 1825. During this year England and the United States formally recognized Mexico.

Independence being secured, two parties came into existence—the Spanish, which became the Centralists, and the Republicans, who became Federalists. To this division is due the constant internal disturbances and agitations in Mexico from 1828 to 1846.

The two parties succeeded each other in power, mostly through revolutions, until 1847, when the war with the United States, which had commenced the year previous, ended, and the latter nation acquired more than two-fifths of the Mexican territory. After the declaration of peace between the two countries the Mexican Liberal party remained in power (except from 1853 to 1855, when General Santa-Anna governed as Dictator), carrying out its theories of government. In the year 1857 the Constitution now in force in Mexico was framed by a constitutional assembly.

In 1861 England, Spain, and France formed an alliance to declare war against Mexico, but the alliance had been scarcely perfected when the two first-named powers withdrew and France was left alone in the enterprise.

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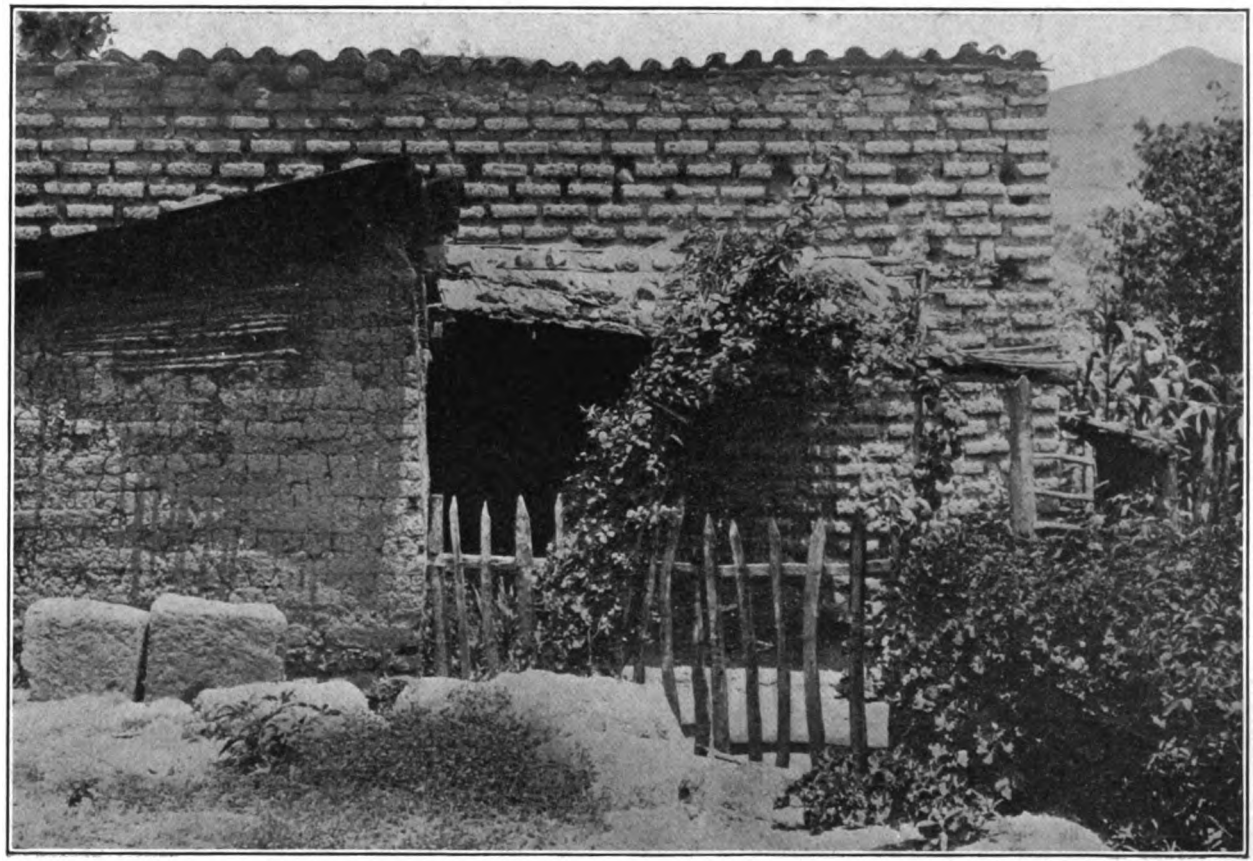

House in Which Benito Juarez Was Born, Guelatao, State of Oaxaca.

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War between France and Mexico lasted from 1862 until 1867 without the French gaining any decided foothold, but possessing themselves finally of the capital, they established an empire, aided by a number of disaffected Mexicans, and placed the crown upon Maximilian of Hapsburg, Archduke of Austria.

The Archduke arrived in the City of Mexico on June 12, 1864, accompanied by his wife, Carlota, daughter of Leopold I, King of the Belgians. These two unfortunate beings were crowned Emperor and Empress of Mexico with great solemnity in the cathedral, and ruled a portion of the country until 1867.

But Mexico refused to submit to Maximilian, who, bereft of the aid and protection of the French, intrenched himself in Querétaro, where he was made prisoner by the Republicans and shot, together with the Imperialist Generals Miramón and Mexía, at the Cerro de las Campanas, the 19th of June, 1867.

Benito Juarez, of Indian birth, and possessed of great ability, patriotism, and energy, was the President of the Republic during the turbulent times of the reformation and the war with France. He entered the capital victorious on the 15th of July, 1867, and retained the Presidency until his death, in 1872, being the only Mexican who has died during an occupancy of that office. His immediate successor was Sebastian Lerdo de Tejada, who retained the office until 1876, when he was unseated by the revolution of Palo Blanco. Gen. Porfirio Diaz succeeded Lerdo de Tejada in May, 1877, and was followded by Gen. Manuel Gonzales in 1880. In 1884 General Diaz was elected to a second term, and continued at the head of the Government until his resignation, May 25, 1911, when a provisional government was established under the presidency of Lic. Francisco Leon de la Barra, formerly Ambassador to the United States.

The heads of the government of Mexico since the securing of independence are given in a table in the Appendix, page 329.

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JUAREZ.

Benito Juarez, President of Mexico during the French Invasion.

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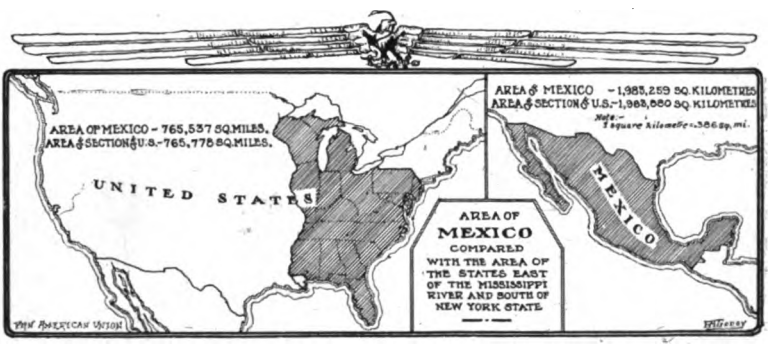
CHAPTER II.

Area and Population.

THE area of the Republic of Mexico is 765,537 square miles (1,983,259 square kilometers), to which should be added the numerous islands along the east and west coasts, some inhabited, some so small or unwatered that they offer no opportunity for settlement; their combined area is estimated at 1,560 square miles (4,042 kilometers). The size of the whole country is, therefore, equal to that portion of the United States east of the Mississippi River and south of the State of New York.


AREA OF MEXICO - 765,537 SQ MILES.
AREA & SECTION & U.S. - 765,778 SQ MILES.
UNITED STATES
AREA & MEXICO - 1,983,259 SQ KILOMETRES
AREA & SECTION & U.S. - 1,983,680 SQ KILOMETRES
MEXICO
AREA OF
MEXICO
COMPARED
WITH THE AREA OF
THE STATES EAST
OF THE MISSISSIPPI
RIVER AND SOUTH OF
NEW YORK STATE

AREA OF MEXICO COMPARED WITH PART OF THE UNITED STATES.

For administrative purposes the Republic is divided into twenty-seven States, three Territories and a Federal District. A convenient classification, regarding the geographical relation of the federal elements to each other, adopted also by the Government in its census tables, is the following:*

*Another List of States, with populations and Post Office Abbreviations, and elevations of capitals, is given in the Appendix, page 333.

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CENTRAL STATES.	CAPITALS.	POPULATION OF CAPITALS. 1900	1910
Aguascalientes	Aguascalientes	35,052	44,800
Durango	Durango	31,092	34,085
Guanajuato	Guanajuato	41,486	35,147
Hidalgo	Pachuca	37,487	38,620
Mexico	Toluca	25,940	31,247
Morelos	Cuernavaca	9,584	12,668
Puebla	Puebla	93,521	101,214
Querétaro	Querétaro	33,152	35,011
San Luis Potosi	San Luis Potosi	61,019	82,946
Tlaxcala	Tlaxcala	2,715	2,812
Zacatecas	Zacatecas	32,866	25,905
Federal District	City of Mexico	368,898	470,659
NORTHERN STATES.			
Chihuahua	Chihuahua	30,405	39,061
Coahuila	Saltillo	23,996	35,063
Nuevo Leon	Monterrey	62,266	81,006
Sonora	Hermosillo	10,613	14,518
GULF STATES.			
Campeche	Campeche	17,109	16,864
Tabasco	San Juan Bautista	10,543	12,084
Tamaulipas	Ciudad Victoria	10.086	17,861
Veracruz	Jalapa	20,388	24,816
Yucatan	Merida	43,630	61,999
Territory of Quintana Roo	Santa Cruz de Bravo	.....	2,258
Colima	Colima	20,698	25,148
Chiapas	Tuxla Gutierrez	9,395	10,217
Guerrero	Chilpancingo	7,497	7,848
Jalisco	Guadalajara	101,208	118,799
Michoacan	Morelia	37,278	39,116
Oaxaca	Oaxaca	35,049	37,469
Sinaloa	Culiacan	10,380	13,578
Territory of Lower California	Ensenada	1,726	2,177
	La Paz	5,046	5,456
Territory of Tepic	Tepic	15,488	16,805

The Federal District lies at the southeast of the Valley of Mexico, its greatest length measuring 49 kilometers (30½ miles) from southeast to north, and its greatest width measuring 40 kilometers (25 miles) from east to west. This is the most his-

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toric spot in the Republic, and was the center of the Aztec as well as of other effective occupations. It is surrounded on all sides by the State of Mexico except to the south, where it is bounded by the State of Morelos. This portion of the Republic is under immediate jurisdiction of the Federal authorities.

The Central States include those that are entirely within the country, have no seacoast, and have therefore no means of approach except over Mexican soil. They occupy almost entirely the great central plateau, and cover the area throughout which the early Spanish settlements chiefly flourished. The richest mines, the largest cities and the structures of most artistic merit are located in them. The greater part of the population is concentrated in these States, and, as a rule, the principal agricultural and productive industries have here reached their highest development.

The Northern States are those bordering on the boundary with Texas and Arizona, but with no open seaboard on either Atlantic or Pacific Oceans. Sonora is washed by the waters of the Gulf of California, but as the southern extremity of the State is opposite the tip of the Territory of Lower California, it is all Mexico except along the northern frontier. These States are sparsely populated, have few large cities, and are still free for increased settlement. They are heavily wooded, mountainous for the most part, and the climate is quite temperate. There are numerous mines in them, and the pastoral industry is of decided importance.

The Gulf States are those bordering on the Gulf of Mexico. They form the eastern littoral, and were the first to be discovered by the Spaniards. The climate and products are tropical below the line of the *tierra templada,* but the western part of Veracruz and Tamaulipas rises into the same altitude as that of the Central States. South of these States are immense areas of a low altitude, but with a very rich soil, covered to a great extent with forests. In Yucatan the henequen fiber plant has been developed into one of the important industries of the Republic.

The Pacific States have an open seaboard on the Pacific Ocean. They have a relatively narrow coast line, but with some excellent harbors, the larger portion of the interior being of the same character of soil, climate and production as the Central States. Although several of the early settlements were in the Western States, yet as a rule they have not many cities. This area is naturally very rich, and will undoubtedly partake materially in the future development of the country.

The three territories, Tepic, Lower California and Quintana Roo, are areas of the Republic which, it is thought, can for the present be better administered by the federal than by a local government. Except Tepic, they are thinly inhabited, the other

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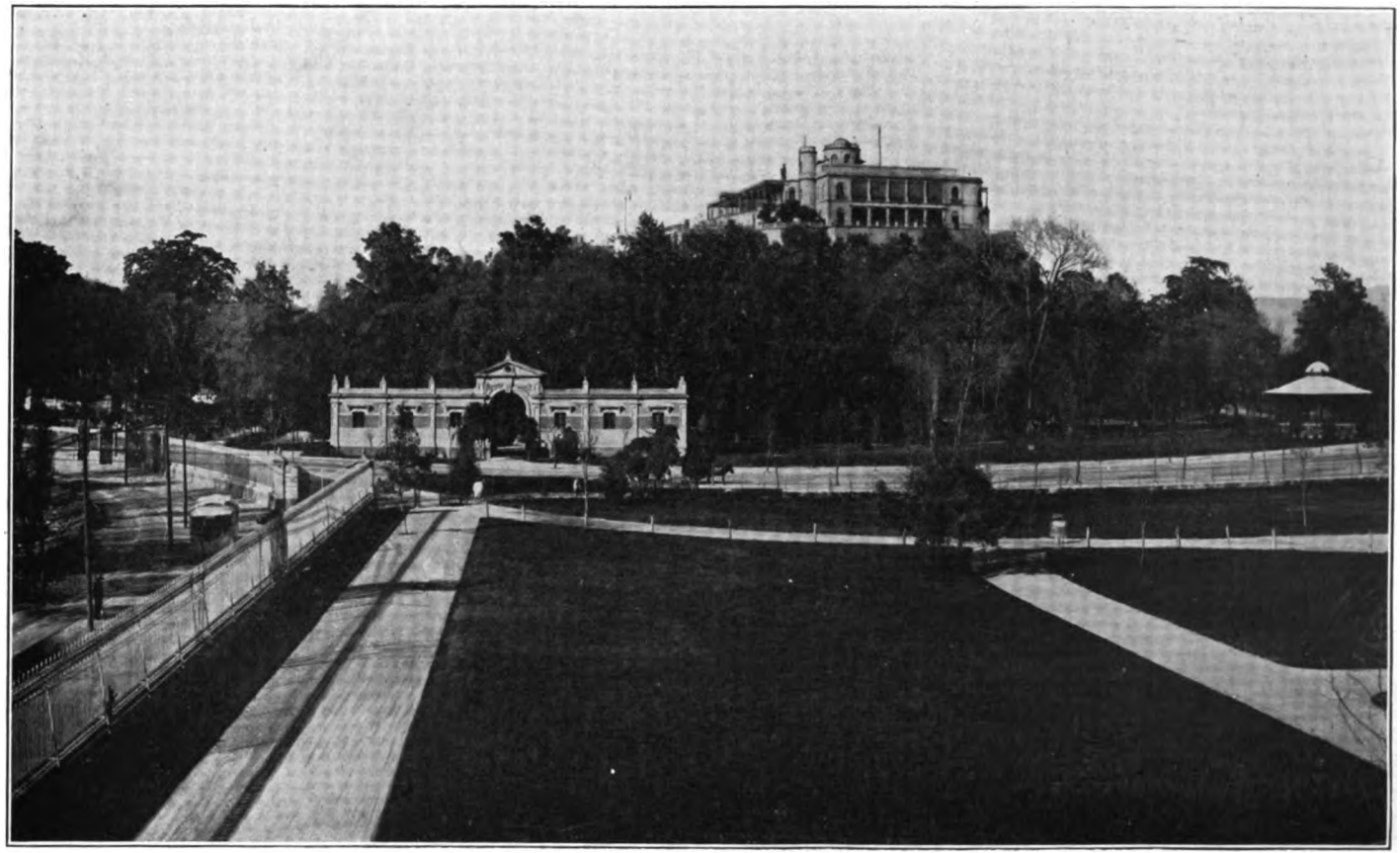

CASTLE OF CHAPULTEPEC, SHOWING A PORTION OF THE PARK AT THE FOOT OF IT. MEXICO CITY.

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two not yet being settled enough to admit them to statehood according to the Constitution.

All the States have a well-protected system of self-government, under which local matters are left to the citizens resident therein. Their relation to the Federal Government is carefully defined in the Constitution.

The population of the Republic is, according to the census of 1910, 15,063,207. The center of population falls, therefore, close to the city of Mexico. About 50 per cent can neither read nor write, but with the remarkable spread of education by the public schools throughout the nation, this proportion is rapidly decreasing. It must be remembered, also, that these analphabets are practically all Indians, whom the Government, both State and National, has just begun to reach, but it may be hoped that the coming generation will see noticeable changes in this respect. The Indians enjoy the political and civil rights of Mexicans, while special laws for their protection are features of the Mexican code.

Of the total population about 20 per cent are of the white race; 43 per cent of mixed, and the rest of Indian race. The foreign population includes natives of forty or more countries and numbers over 100,000, of whom there are 30,000 Americans, 20,000 Spaniards, 5,000 British and 5,000 Germans.

Government.

The Constitution* now in force in Mexico, originally promulgated February 5, 1857, and subsequently amended,† declares that the Mexican Republic is established under the representative, democratic and federal form of government, composed of States free and sovereign in everything relating to their internal administration, but united in one single federation in accordance with the principles set forth in said Constitution. The Supreme Government is divided into three co-ordinate branches, viz.: Legislative, Executive, and Judicial.

Legislative Power.—The legislative power of the nation is vested in a general Congress, consisting of two Chambers, the Deputies and the Senate. The Chamber of Deputies is composed of representatives of the nation elected every two years by the Mexican citizens and in the proportion of one Deputy for every 60,000 inhabitants, or fraction over 20,000, the term of service being two years, a substitute being designated for each Deputy.

A Deputy must be a Mexican citizen in the full exercise of his rights, 25 years of age, a resident of the State or Territory where chosen, and must not belong to the ecclesiastical state.

*The complete Constitution is given in the Appendix, page 336.
†See Constitution, Appendix.

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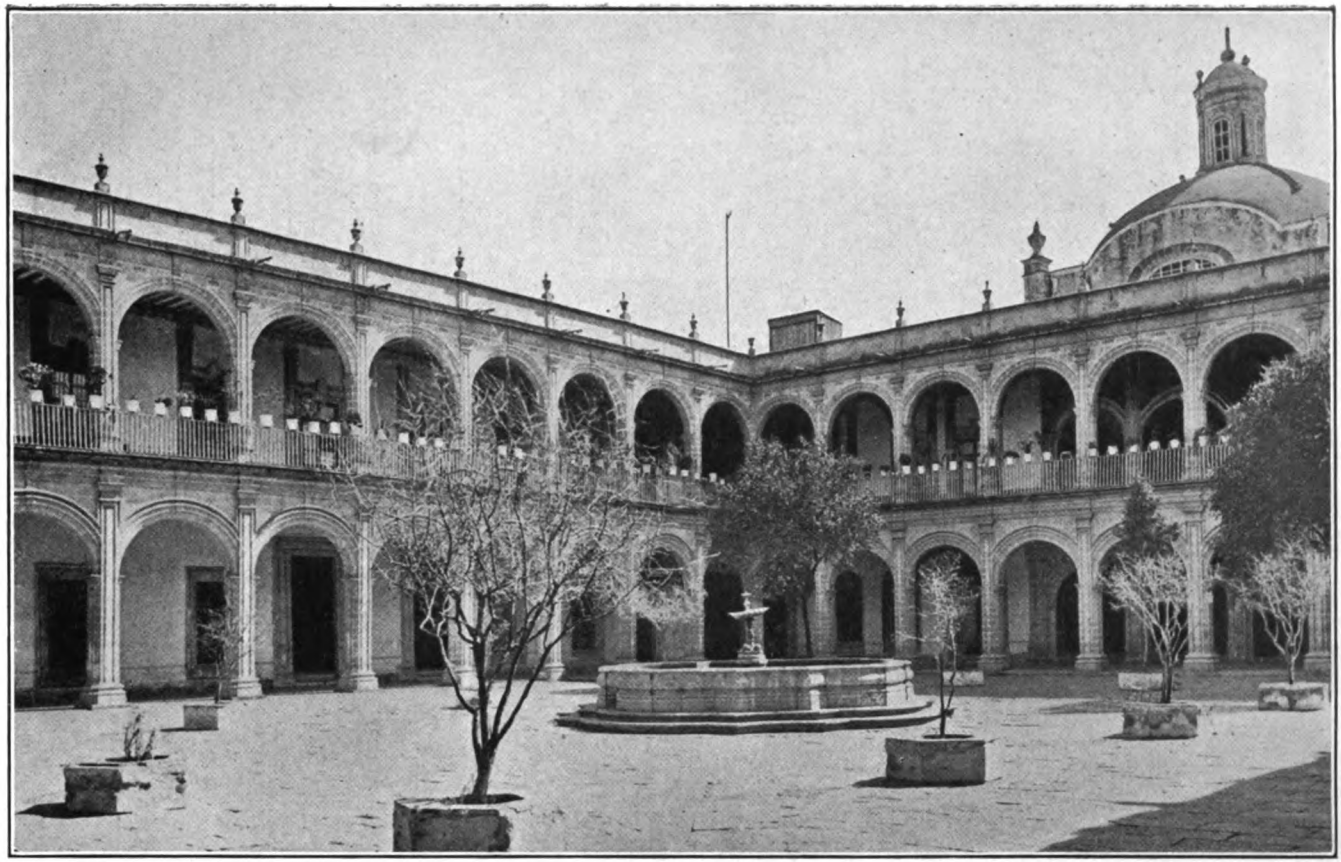

"Colegio de la Paz," Mexico City.
School for orphan girls, one of the most famous charitable institutions of the country. The cornerstone was laid in 1734.

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The Senate consists of two Senators for each State and also two for the Federal District, chosen in the same manner as Deputies, and subject to the same limitations as to citizenship, residence, and civil status, but the age minimum is 30 years, and the term of service four, half the Senate being renewed every two years.

Federal officeholders receiving a salary are ineligible for election to either Chamber. Senators and Deputies are elected indirectly in the first degree and by secret ballot.

Congress.—The Congress has two ordinary sessions annually—the first, which may be extended thirty days, beginning on September 16th and ending on December 15th, and the second convening on the 1st of April and adjourning on the last day of May.

Executive power.—The Executive power is lodged in the "President of the United Mexican States."

The President is elected indirectly in the first degree and by secret ballot. His term of office is six years, commencing on the 1st day of December after election. By an amendment to the Constitution, under date of December 20, 1890, he may be re-elected indefinitely.

A Vice-President, according to the amendment of May 6, 1904, is also elected.

The President must be a native-born Mexican citizen; 35 years of age; independent of any ecclesiastical order; a resident of the country at the time of election.

Cabinet.—The President is assisted in the discharge of his duties by a Cabinet, consisting of eight Secretaries:

Secretary of Foreign Relations (*Secretario de Relaciones Exteriores*);
Secretary of the Interior (*Secretario de Gobernación*);
Secretary of Justice (*Secretario de Justicia*);
Secretary of Public Instruction and the Fine Arts (*Secretario de Instrucción Pública y Bellas Artes*);
Secretary of Promotion (*Secretario de Fomento*);
Secretary of Communications and Public Works (*Secretario de Comunicaciones y Obras Públicas*);
Secretary of Finance (*Secretario de Hacienda, Crédito Público y Comercio*);
Secretary of War and Marine (*Secretario de Guerra y Marina*);

Cabinet officers must be native-born Mexican citizens, and at least 25 years of age.

Judicial power.—The judicial power is vested in the Supreme Court of Justice and the district and circuit tribunals. The Supreme Court of Justice is composed of fifteen justices. Their

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CALLE DEL TEATRO, MEXICO CITY.

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term of office is six years, and they are elected by the people indirectly (in first degree), in the same manner as Deputies and Senators. The qualifications required are to be learned in the law in the judgment of the electors; to be at least 35 years of age, and to be Mexican citizens by birth, in full enjoyment of their rights.

Federal courts have jurisdiction—

In all cases arising in regard to the compliance with and application of Federal laws, save when such application affects only private interests, in which case the ordinary courts of the States, Federal District, and Territories shall be competent to assume jurisdiction; in admiralty cases; in cases to which the Federation is a party; in cases arising between two or more States; in cases arising between a State and one or more citizens of another; in civil or criminal cases arising from treaties concluded with foreign powers, and in cases affecting diplomatic and consular agents.

The Supreme Court of Justice has original jurisdiction in all cases arising between two States, and in those wherein the Union is a party; it also has power to settle questions arising among the Federal courts, between these and the State Courts, or between the courts of two States. The Supreme Court is also the court of appeals or of last resort in all cases here mentioned.

The jurisdiction of the Federal courts extends also to all cases growing out of (1) laws or acts of any authority infringing on individual rights; (2) laws or acts of the Federal authority violating or limiting the sovereignty of the States; (3) laws or acts of the latter encroaching on the Federal authority.

States' government.—As provided by the Federal Constitution, the interior government of the States is republican, representative, and popular, and is divided into the same branches as the General Government. The legislative power in the large majority of the States is vested in a single representative body called a congress, the members of which are called deputies, and are in most States elected indirectly by the people, serving two years. The executive power is lodged in a governor, elected, almost without exception, by indirect vote of the people, and serving for four years. The judicial power in the greater number of States resides in a supreme court of justice and inferior courts and judges.

The States are divided politically, as a rule, into districts governed by a *jefe político.* The minor divisions are *partidos* and *municipalidades,* the local authority being an *Ayuntamiento,* corresponding to the county, township and town council in the United States of America. Each State is bound to deliver, without

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PLAZA DINAMARCA, WHERE STATUE OF GEORGE WASHINGTON WILL BE ERECTED BY THE AMERICAN COLONY, MEXICO CITY.

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delay, criminals from other States to the authority demanding them.

The States cannot—

Conclude any alliance, treaty, or league with another State or foreign powers, except the league which may be formed between frontier States for offensive or defensive warfare against savages; issue letters of marque or reprisal; coin money, issue paper money, stamps, or stamped paper; tax the transit of persons or goods crossing its territory; prohibit or tax, either directly or indirectly, the entrance or exit to or from its territory of national or foreign merchandise; obstruct the circulation or consumption of national or foreign goods by means of imports or taxes; nor can they, without the consent of the Congress of the Union, establish tonnage or any other port dues, nor impose burdens or duties upon imports or exports; maintain at any time a standing army or ships of war; make war by themselves on any foreign power, save in cases of invasion or danger so imminent as to admit of no delay, in which cases they must immediately report to the President of the Republic.*

Powers of the Federation.—It is the exclusive faculty of the federation to tax merchandise, imported or exported, or which passes in transit through the national territory, likewise to regulate at all times, and even to prohibit, for reasons of policy and security, the circulation within the Republic of all merchandise from whatever source; but the said federation can not establish or decree in the District or Federal Territories the taxes and laws expressed as regard the States.† The Federal District and the Territories are, as in the United States of America, under the control and jurisdiction of the Federal Government, although the local authorities are elected by the people, as are Deputies and Senators to the National Congress. The population necessary to entitle a Territory to Statehood is 120,000 inhabitants at least.

Army and Navy.

On September 30, 1909, the military establishment of Mexico consisted of 7 generals of division, in active service, 45 generals of brigade, 58 brigadier-generals, 753 commanding officers, 2,355 other officers, and 26,638 privates. The Army has 6,275 horses and 3,198 mules.

In the above numbers the *personnel* of the Navy, which is small, is included.

The Infantry consists of thirty regiments (in Spanish called *batallones,* or battalions, the name "regiment" being used ex-

*For a complete statement in regard to the relation of the States to the Federation, Title V of the Constitution must be consulted.

†See Art. III. Nos. VI and VII.

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clusively for cavalry and artillery corps); a regiment of sappers and miners; four *cadres;** two fixed companies, one stationed in the northern and the other in the southern district of Lower California; and an auxiliary force, stationed at Chilpancingo, State of Guerrero.

The Cavalry consists of 14 regiments, four *cadres* and an irregular auxiliary corps stationed at Cholula, State of Puebla.

There are two regiments of horse artillery, one regiment of light artillery, one regiment of mountain artillery, one *cadre* of light artillery and a company of machine guns. The Army also has a well-equipped artillery park, a fixed battery at Veracruz, and artillery sections at Acapulco, Mazatlan and Tampico.

The Department of War and Marine has charge of all military affairs. The Secretary of War and Marine is the representative in the Cabinet.

For purposes of military administration the Republic is divided into ten military zones, three commanderies and one *Jefatura de Armas.* All are in constant touch with the Department of War and Marine.

The Ministry of War and Marine is divided into nine bureaus or sections, each of which has special charge of a given branch of military administration. These sections are: Special Staff Corps; Department of Engineers; Department of Artillery; Department of the Navy; Sanitary and Hospital Service; Department of Infantry; Department of Cavalry; Military Justice, Archives and Library; Auditing and Administration.

The military zones, with their headquarters, are as follows (July, 1909):

Zone.	Headquarters.
First	Torin, Sonora.
Second	Chihuahua, Chihuahua.
Third	Monterrey, Nuevo Leon.
Fourth	Guadalajara, Jalisco.
Fifth	San Luis Potosi, San Luis Potosi.
Sixth	Leon, Guanajuato.
Seventh	Puebla, Puebla.
Eighth	Oaxaca, Oaxaca.
Ninth	Juchitan, Oaxaca.
Tenth	Santa Cruz de Bravo, Territory of Quintana Roo.

The military commanderies are established at Mexico City, Veracruz and the port of Acapulco in the State of Guerrero.

Mexico possesses the following establishments for the manufacture of war material, all of them subject to the War Depart-

*A skeleton or nucleus of officers and men, ready to be formed into a regiment on due notice.

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ment: General artillery stores, artillery workshops, an arms factory, an artillery foundry, a powder factory, a cartridge factory, and a national arsenal. There has recently been opened for operation, also, a factory and laboratory for the manufacture of smokeless powder according to the most approved methods.

The educational establishments are the Military Academy at Chapultepec, the Academy of *"Aspirantes,"* situated near Tlálpam in the Federal District; a Naval Academy at Veracruz; a College of Practical Military Surgery; a Veterinary College; a College of Military Bugle-Calls; and a school connected with the artillery workshops. In addition, there are schools in all the barracks for the instruction of the soldiers in the rudiments of general knowledge.

The Military Academy at Chapultepec, which ranks high among the establishments of its kind throughout the world, has (July, 1909) 291 students. The course of its studies for officers of infantry, cavalry and tactical artillery, is three years, and for officers of the Staff Corps, technical artillery and the Corps of Engineers, seven years. In order to accustom the cadets from the start to the duties of command and the practical exigencies of military life, they are required to take part at certain periods of the year in evolutions of infantry, cavalry and artillery in the neighborhood of the academy, and during the first half of November to live in barracks. During the second half of November they join an expeditionary column which proceeds, under orders from the War Department, to a given locality and engages in regular campaign service and general military maneuvers.

The *Escuela Militar de Aspirantes* is a recent creation, having been opened on January 1, 1905, by virtue of a law promulgated on December 7, 1904. Its special object is to afford a regular supply of properly qualified subaltern officers for infantry, cavalry and artillery. In consequence, the course is comparatively brief and essentially practical. The college has (July, 1909) 205 cadets and is giving good results.

The Naval Academy at Veracruz has (July, 1909) 107 cadets.

Mexico has not burdened herself with the heavy expense of a large modern navy. The few vessels which she possesses are destined for purposes of instruction, coast-guard service and transport. Those vessels are the transport and gunboat "General Guerrero," recently built for the Mexican Government at Barrow-in-Furness, England; the gunboats "Veracruz," "Bravo," "Morelos," "Demócrata," and "Tampico"; the transport "Progreso," and the corvettes "Zaragosa" and "Yucatan," training ships.

The system of military jurisprudence consists of a Supreme Military Court composed of 11 justices, a Military Prosecution

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MILITARY COLLEGE AT CHAPULTEPEC.
(The West Point of Mexico.)

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Department, and military tribunals and courts-martial distributed throughout the country.

The Rural Guards (*Rurales*) of the Federation are a body specially organized to guard the highroads and to assure personal safety to wayfarers and residents throughout the Republic outside the centers of population. This force is composed of 12 regiments, each consisting of 66 officers, superior and petty, and 152 men. All the regiments of *Rurales* are subject to a chief whose title is that of Inspector General of the Force. But though the organization of the Rural Guards is strictly military, they are not under the jurisdiction of the War Department, but under that of the Interior Department. They invariably, however, take part in the military parades on the great national holidays, when their horsemanship and typical uniforms attract attention. Though not belonging to the regular army, they would constitute an important element of defense if the occasion should arise. The same may be said of the *Fuerzas de Seguridad* (allied to the Rural Guards) maintained by the several States.

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RURALES.

The Rural Police force was formed for the purpose of ridding the country of outlaws at a time when Mexico was overrun by bandits and robbers. Having fulfilled this duty the organization was continued in the service of the Federal Government to enforce the laws and maintain order throughout the Republic. The force consists of some 2,500 picked men, alike renowned for their fine appearance, good conduct, and splendid horsemanship.

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CHAPTER III.

Public Institutions.

Education in Mexico has been for many years the subject of serious consideration on the part of the Government. As early as 1836, in the history of the Republic, it had been decreed that the department boards in the States should establish public schools. In 1843 there were 1,310 primary official schools, but the organization was neither complete nor systematic.

Many obstacles have, therefore, presented themselves and have been overcome. To-day the country enjoys the benefit of a liberal system of education, which is administered under three branches—gratuitous, lay and obligatory. Laws have been enacted, normal schools for both sexes have been established, and in order still further to extend the benefits to be derived from a uniform educational plan throughout the whole country, the Government held a national congress of education at which delegates from the various States assembled.

The labors of this congress resulted in the grading of educational facilities, from primary or children's schools to higher classes and special institutions of learning. A general plan of study was outlined for all grades, the subjects taught were divided into annual courses, and there was also provision for the unrestricted selection of the latest and most improved methods of instruction suitable to each grade. In short, the examination and choice of any system, either technical or administrative, which might be deemed suitable for education in Mexico, formed the purpose for which the congress was convened.

The Executive at that time laid before Congress the plan of a reform of the law of March 21, 1891, placing elementary tuition under the care of municipalities and obliging them to establish at least one school for each 4,000 inhabitants. This law obtained the approval of Congress, and by virtue thereof the municipal schools of the Federal District and of the Territories came under Federal jurisdiction. This superior board of primary education (*Dirección Superior de Instrucción Primaria*) was also created for the organization, superintendence and management of said institutions.

The law of December 2, 1867, passed soon after President Juarez returned to the capital and his triumph over the intervention, readjusted the entire scheme of instruction, elementary, preparatory and superior. It made elementary instruction compulsory, it encouraged the States separately to introduce their own schools, although private institutions were not disturbed.

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National Library in Mexico City, Originally the Temple of San Agustin, Erected in 1692.

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and introduced reforms even in the professional faculties. At this same time the famous Library was founded, and the church of Saint Augustine (*San Agustin*) was set apart for it.

Another law making education compulsory was promulgated March 23, 1888, but its immediate enforcement was not decreed. The first congress of public education was, therefore, convened for the purpose of adopting such measures as should tend to establish an efficient and uniform system of education. This congress met on December 1, 1889, and closed its sessions on March 31, 1890, after having passed on, and approved, 124 questions, the principal being the establishment of a national system of popular education based on the uniformity of obligatory, gratuitous and laical primary education.

A second congress was convened on December 1, 1890, which solved certain problems concerning compulsory elementary education, fixed the methods to be followed in the schools of superior primary education, and settled matters pertaining to normal, preparatory and special schools. As a result of this congress the law of March 21, 1891, becoming effective January 17, 1892, was enacted, regulating compulsory education in the Federal District and the Territories.

The primary schools previously supported by the Government were those which were under the care of the *Compañia Lancasteriana,* which, since 1822, had been working unceasingly for gratuitous public education. The excellent methods employed by this association had become obsolete, and the Government had therefore brought them directly under the protection and jurisdiction of the nation, placing them under the supervision of the Department of Justice and Public Instruction (now the Department of Public Instruction and Fine Arts (*Secretaría de Instrucción y Bellas Artes*)), the Treasury being ordered to take charge of all buildings and moneys used in the maintenance of the institutions, as they became the property of the Republic.

On May 19, 1896, the law of public education was promulgated, its salient points being that primary, elementary education in the Federal District and Federal Territories was placed under exclusive control of the Executive; primary superior education was organized as an intermediary educational step between elementary and preparatory instruction; a general board of primary education was created, charged to develop and maintain a scientific plan. It was also decreed that preparatory education should be uniform for all professions, its extent being limited to the study of matters necessary to the development of the physical and intellectual faculties and the morals of youth; it being further directed that professional education be reorganized, limiting it to technical matters of the profession to which each particular school is devoted. By virtue of this law education

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ceased to be in charge of the Board of Aldermen (*Ayuntamientos*) of the various districts or municipalities.

During the year 1897 laws were passed reorganizing the schools of engineering, of jurisprudence, and of medicine. The National School of Fine Arts (architecture, painting, sculpture and engraving) was also improved during that year. The National Conservatory of Music, giving instruction in both music and acting, was brought up to this standard in 1900.

On September 13, 1902, the Superior Board of Public Education (*Consejo Superior de Educación Pública*) was inaugurated, under the Sub-secretary of Public Instruction. This body has as its function the supervision of education throughout the Republic, but directly in its care fall the details of the school system in the Federal District and the national Territories.

The Department of Public Instruction and Fine Arts, the Secretary of which is a cabinet officer, has charge of the following matters: primary, normal, preparatory and professional education in the Federal District and Territories; the Academy of Fine Arts; the Conservatory of Music and Declamation; the College of Arts and Trades; the Commercial College, and other institutions for public instruction that may in future be established in the Federal District and Territories; scientific academies and so-

NORMAL SCHOOL IN THE CITY OF SALTILLO, STATE OF COAHUILA.

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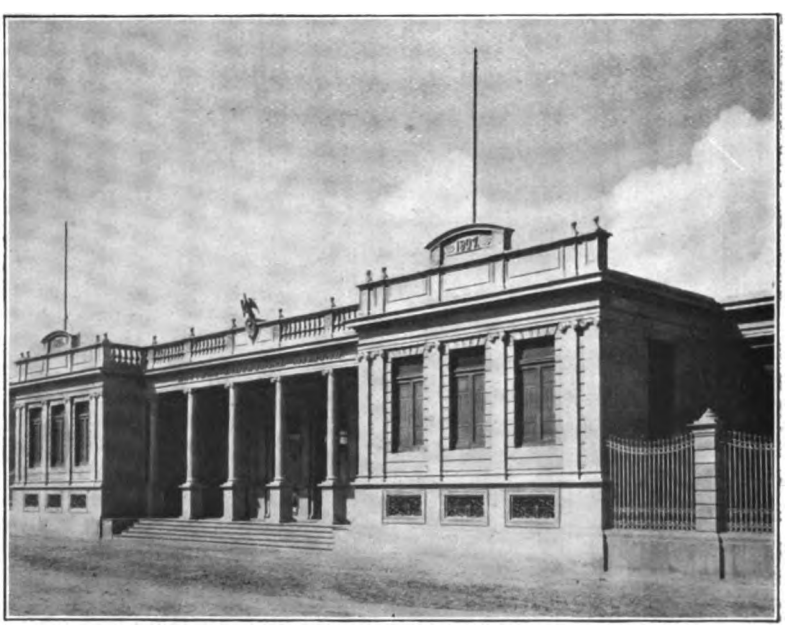
cieties; the National Pathological Institute and other national institutes of a teaching character; copyrights; libraries, museums and national antiquities; archeological and historical monuments; the administration of theaters controlled by the Federal Government, and the encouragement of cultural spectacles; the encouragement of art and science; exhibition of works of art, and scientific or artistic conferences.

It is seen from this category that the Federal Government exercises supervision over a great part of the education of the country. Especially is this true of the primary branches. In fact, a scheme is published by the Superior Board of Public Education which is to be the guiding program for public instruction throughout the Republic. This applies particularly to primary (elementary) grades, which are compulsory.

On the other hand, the individual States exercise considerable discretion as to the manner in which such instruction is carried out, and are practically independent in their development of the higher grades and courses, each State encouraging high schools and special schools according to the needs of its own population, and devoting to them what funds seem necessary for their purpose.



MILITARY INDUSTRIAL SCHOOL IN THE CITY OF SAN LUIS POTOSI.

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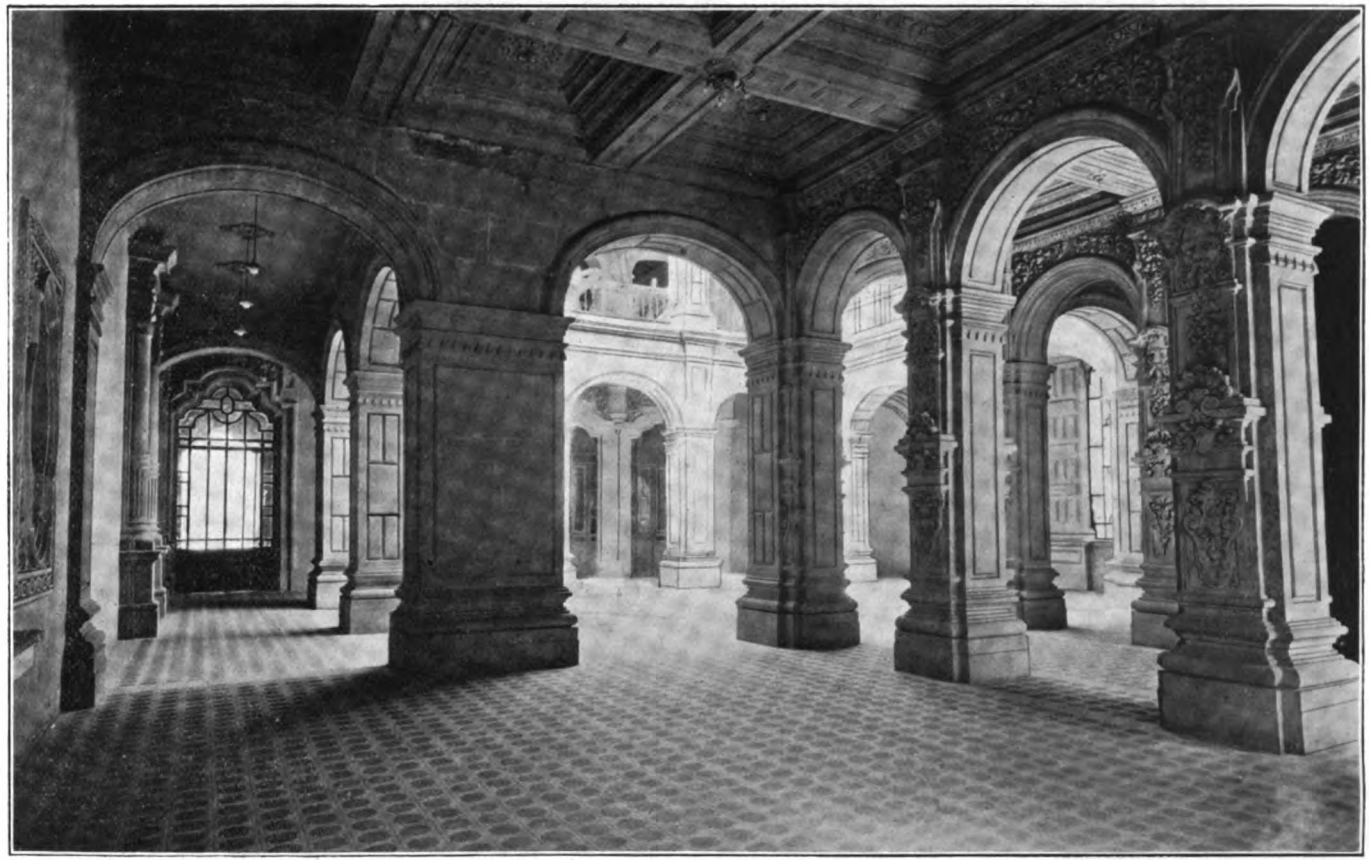

MAIN CORRIDOR OF THE NATIONAL PREPARATORY SCHOOL, MEXICO CITY.

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The most advanced branches, those that fit students for technical or professional careers, are again subject to direct Federal control. At one time Mexico conducted a university patterned after the classical European models as the colonists knew them. This Mexican university was founded by royal decree of January 25, 1553, and was followed by another at Guadalajara and by one of less importance at Chiapas. It was closed and dissolved during the unquiet times of 1862. The faculties teaching law, medicine, engineering and artistic branches continued their work, however, although organic association between them was lost.

It has been, nevertheless, the matured intention on the part of the Government to re-establish the university on national lines. The consummation of this plan was, therefore, reached during 1910, and one of the impressive ceremonies that took place during the centenary celebrations was the opening of the Mexican University (*Universidad Mexicana*) on September 22, 1910. No complete building had at the time been prepared, and consequently the exercises—the President of the Republic, the Cabinet officers and invited guests from foreign universities being present—took place in the amphitheater of the National Preparatory School (*Escuela Nacional Preparatoria*). From that date regular courses in university branches are to be given by the various faculties.

The general program for primary (compulsory) education embraces morals, civic instruction, the national language, history, geography, arithmetic, the principles of physical and natural sciences, together with drawing, singing, and for girls, sewing, etc. For superior primary instruction there are added French, several sciences in their principles, and advanced studies in graded work. English is also compulsory in many schools in these years. In some cases rudimentary education for adults is provided, and facilities are extended to the inmates of soldiers' barracks, jails, and institutions of correction.

The total number of schools in the Republic in 1900, and the average attendance, are shown in the following table:

Schools.	Total.	Attendance.
Federal and Municipal institutions:		
Primary	9,363	479,785
Secondary and preparatory	41	5,405
Professional	60	5,337
Private institutions:		
Supported by clergy	493	117,543
Supported by associations	152	
Private schools	2,068	
Totals	12,177	608,070

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READING ROOM OF THE NATIONAL LIBRARY IN MEXICO CITY.

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In 1910 the number of primary schools alone had increased to 12,000, and the attendance in them to substantially 1,000,000.

Museums. There are throughout the Republic many museums of art, science and archeology. As a rule each State has, in the capital city, a *Museo del Estado* (State Museum), usually located in the *Palacio* (State Capitol), devoted to State products and antiquities. The largest and best museum of the country is in the City of Mexico. It is a part of the National Palace, and is called the National Museum (*Museo Nacional de Mexico*). The nucleus of the extensive contents is the notable collection of documents on the antiquities of the country, and the collection, of inestimable value, of prehistoric Indian sculptures and relics.

Libraries. The number of libraries in the Republic is increasing. The *Biblioteca Nacional* (National Library), in the City of Mexico, is by far the largest, having about 200,000 volumes. It is exceptionally rich in books treating of theology, of the Church in New Spain, and of the early history of Mexico. The collection is housed in the old church of San Agustin, architecturally one of the most imposing buildings in the city. Other well-known libraries are those in Guadalajara, in Morelia, in Puebla, and in Guanajuato.

Many scientific and literary societies are engaged in active and productive work of various kinds in all parts of the Republic. Some of them received the support of the Government. Their annual publications are adding much to the useful information concerning the country.

Religion. The Constitution expressly provides for the independence of Church and State. For that reason every Church is permitted the free exercise of its religious forms, so long as there is no interference with Government polity. As might be expected from its history, the prevailing religion in Mexico is the Roman Catholic, the foundation of which may be said to date from 1517, the year of the discovery of Yucatan, by Córdava, a rich Cuban merchant. A priest accompanying Córdava made the then heathen temple into a Christian church, and dedicated it under the name of *Nuestra Señora de los Remedios* (Our Lady of Succor), the patron Saint of the Spaniards. The finest edifices in the Republic were erected by the Roman Catholics. The Mexican Episcopal Church, in reality a part of the general Protestant Episcopal Church, the Presbyterian Church, the Methodist Episcopal Church, the Baptist Church, and several other denominational as well as unsectarian religious organizations, have been established in the Republic, and have active, vigorous fields of usefulness. All the Churches foster education and have schools conducted in harmony with the Government scheme of public instruction.

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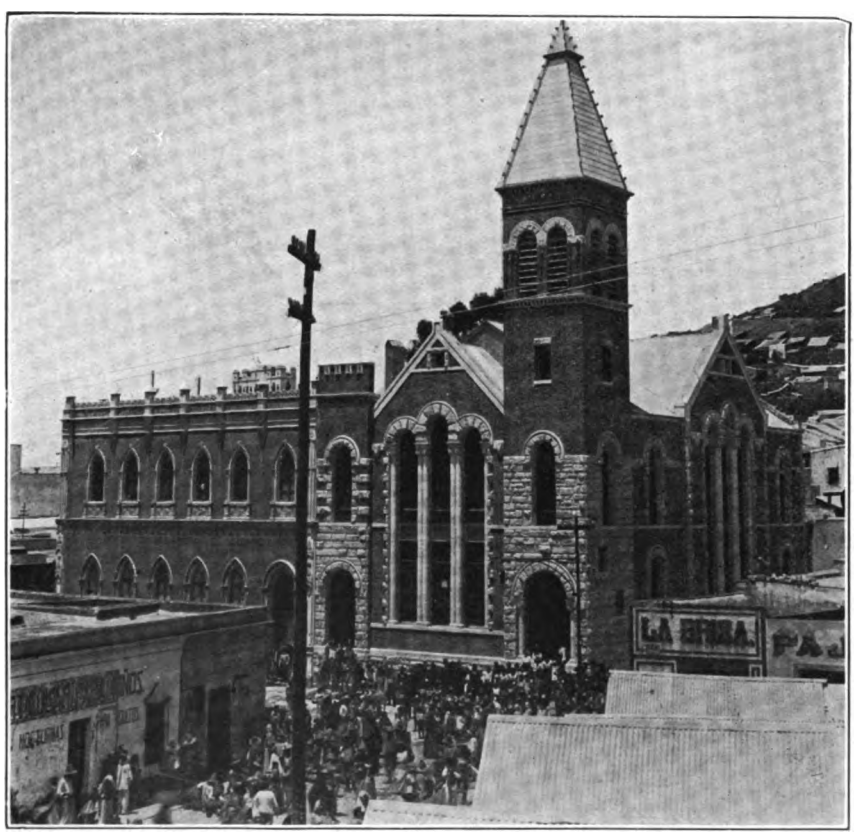
As part of the educational forces of the Republic emphasis must be given to the numerous charitable and correctional institutions, supported to a large extent by the Government, both of the Nation and of the Individual States, and also by private gifts and foundations. The manifestation of this spirit was one of the early incidents of the Spanish conquest, and in every city of colonial times there was either an endowed hospital, school, or asylum, for the benefit of Indian as well as of European inhabitants. Not a few of these institutions have disappeared with changing conditions, but many have preserved their identity or have been taken over by the Government. To these should be added the hospitals and penitentiaries started within the past generation. In this respect Mexico can compare favorably with the most progressive nations of America and Europe. Moreover,



ENGLISH CHURCH AND SCHOOL, PACHUCA, MEXICO.

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it was the expressed intention of the Government, during the centenary celebrations of 1910, to leave, as permanent marks of national progress, for the future inhabitants of the Republic, buildings, like schools, hospitals, asylums and houses of correction, constructed on most modern lines, to indicate the advances of civilization during the hundred years of independence.

Colonization.

The Mexican Government has made little official effort to induce direct *immigration*, but the influx of foreigners, although slow, is steady and healthful. In 1827, shortly after the Republic's recovery from the exhaustion of the war of independence, proposals were made to populate the land by liberal offers to immigrants, but there was no noticeable result. In 1846 further attempts were officially made, and also in 1868 and in 1877. Colonists or immigrants preferred to enter the country without assistance, or to occupy land irrespective of government aid. The fact that Mexico has a native population that has for generations been active in tilling the soil has undoubtedly made the country seem to outsiders less of a virgin territory than other parts of America.

Immigration is therefore left to itself, and grows as the need by those who desire to possess land becomes so developed that they will go far from their native home to satisfy it, rather than by any direct stimulant and encouragement from government aid. The attractions of opportunities in Mexico are also left more to the commercial enterprise of railways and landowners, than to the demand, on the part of the national or State government, for permanent settlers from without. The immigrant, with sufficient capital and patience, has plenty of chance to gain a foothold and to make a home, if he studies conditions carefully, but he must act on his own initiative and can not expect to receive extraordinary support from the Government. An examination of the land and colonization laws (given in Appendices, pages 352 and 354) will explain this statement.

As far as colonies are concerned, the Government has proceeded further. French, Italian, German, Mormon and Boer colonies have been formed in Mexico, and, on the whole, may be said to be doing well. Those who have located in the State of Veracruz, some of which were established over twenty years ago, are fairly prosperous; others in several of the more northern States have made a good showing also. In 1903 the Mexican Government offered its hospitality to the Boers, and their settlement in the State of Chihuahua has shown that they form the

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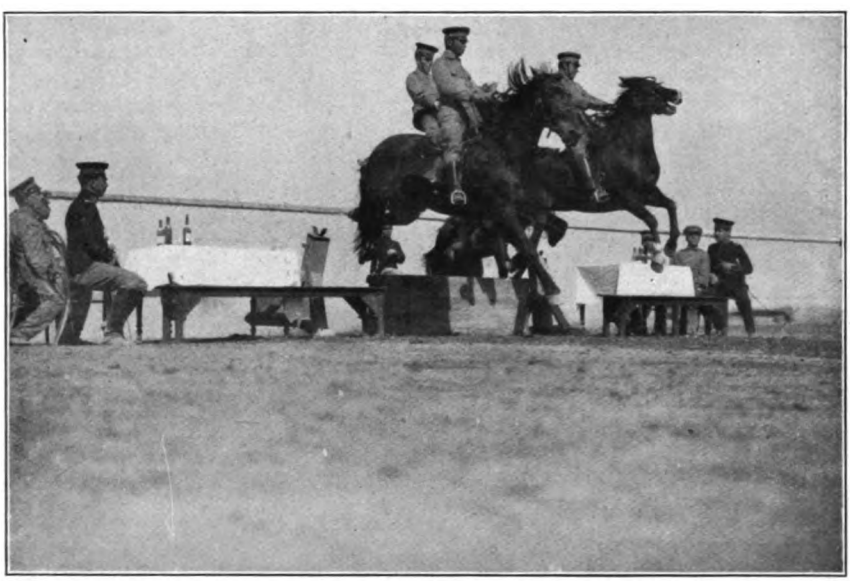
type of immigrant desired in the country. At present, the colony idea is energized quite actively by the hope of financial gain on the part both of those companies originating a colony and of those purchasing land or its equivalent from these companies.



NATIONAL MILITARY TRAINING SCHOOL IN MEXICO CITY.

Cadets, in a race, taking the table jump used as one of the obstacles in a military steeplechase.

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CHAPTER IV.

Products and Resources.

Agriculture.

Although Mexico has been famous, from the days of the first Spanish invasion, for the enormous production of precious metals, yet the agricultural wealth of the country and the natural resources of the soil have been of equal value. Even in the time of Hidalgo the annual agricultural output was $29,000,000, exceeding by $4,000,000 the annual average of the mines.

So well known was the country for its mineral wealth—the silver-producing country par excellence—that foreign students of its affairs have paid less attention to its other resources than its possibilities in this respect fairly warrant. It must be acknowledged that agriculture has not been systematized and that there is room for improvement and development, while, owing to inattention to natural supply, there have been occasions when the country's production proved insufficient for the needs of its inhabitants. The scarcity of cereals is a condition which occurs from time to time at the present day, and in order that it may be properly met Congress has granted discretionary powers to the Executive to reduce the import duties on foreign corn and wheat, or to admit them duty free, as temporary measures to neutralize the effects of crop shortages, and to defeat the manipulations of speculators at the cost of the poorer classes. As means of transportation increase and the soil becomes more systematically devoted to affording sustenance for its people, such irregularities are sure to be overcome.

With Mexico's great variety of climate it would seem that that country offers to each intending settler a valley or a hillside where he may be surrounded with just the conditions as to climate and scenery which he desires.

Situated almost entirely within the tropics, the heat natural to such latitudes is counteracted in a large part of the country by the effects of altitude.

The area of the Republic, officially estimated, is 1,983,259 square kilometers (765,537 square miles). Of this, about 400,000 square kilometers (154,400 square miles) may be described as land unfit for cultivation; the remaining area, almost 1,600,000 square kilometers (617,600 square miles), is divided into forest and meadow land, part of the latter being still very well wooded, but yet suitable for cattle or, with only slight clearing, available also for agriculture. Of the entire area, not more than one-fourth has at present been brought under cultivation. Assuming, therefore, that about 500,000 square kilometers (193,000 square miles) are already in production, there remain 1,000,000 square

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A Modern Farm House (Hacienda), Texcoco, State of Mexico.

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kilometers (386,000 square miles), or 247,000,000 acres of land in Mexico which will ultimately be used for the benefit of mankind.

As the article on climate shows, there are three zones, the hot country (*tierra caliente*), the temperate country (*tierra templada*) and the cold country (*tierra fria*). The hot lands are along the coasts and are characterized by dense tropical jungles, forests containing mahogany and other cabinet woods, and by those cultures that require a combination of heat and humidity. The rainfall is assured. The climate has in general been regarded as inimical to the vigor of the European race, but there is no reason why this condition should not be overcome, and at the present time both medical and sanitary science are bending their effort in that direction.

In the lower lands of the temperate country the character of the vegetation is tropical and sub-tropical, and to this region belong most of the typical hot country products, such as cotton, rice, sugar, coffee, fruits and tobacco. Portions of the temperate country are well off in the matter of annual precipitation, but the rainfall is less than in the lands of lower altitude. In the higher regions the characteristic crops of a moderate climate are cultivated with success, such as Indian corn, wheat and other cereals. Some States of the Mexican Union combine both climates within their borders, and one can look down from the regions of the pine into those of the palm and sugar cane.

The cold country, so-called, though much of it enjoys a mild and equable climate, embraces the great central plateau on which Mexico City itself is situated. This is the region of the large haciendas, or immense ancestral estates of the Mexican landed aristocracy. Their owners cling to them with great tenacity and consider it a point of family honor to keep them intact. But the fact that in some cases these owners lack the necessary capital to cultivate their estates to the full capacity, and to undertake irrigation works and other needed improvements, is a condition that has militated against the permanent prosperity of agriculture in this region. In the cold country all the cereals are preferably, and some of them exclusively, cultivated. It is also the home of the great plantations of *maguey,* from which *pulque,* the drink of the masses of the people, is prepared. Droughts are periodical, and, when they occur, they cause bad harvests.

With natural conditions all in their favor, the Mexicans for more than two centuries searched for silver and gold, but neglected the fields and left the forests untouched, save where the products were needed for domestic purposes. As long ago as the early part of the sixteenth century the far-seeing Bishop Zumárraga said: "The country is rich and very fertile. It contains gold, silver, copper—and lands abundantly producing whatever is needed. He who would reap must first sow, but if the tilling of

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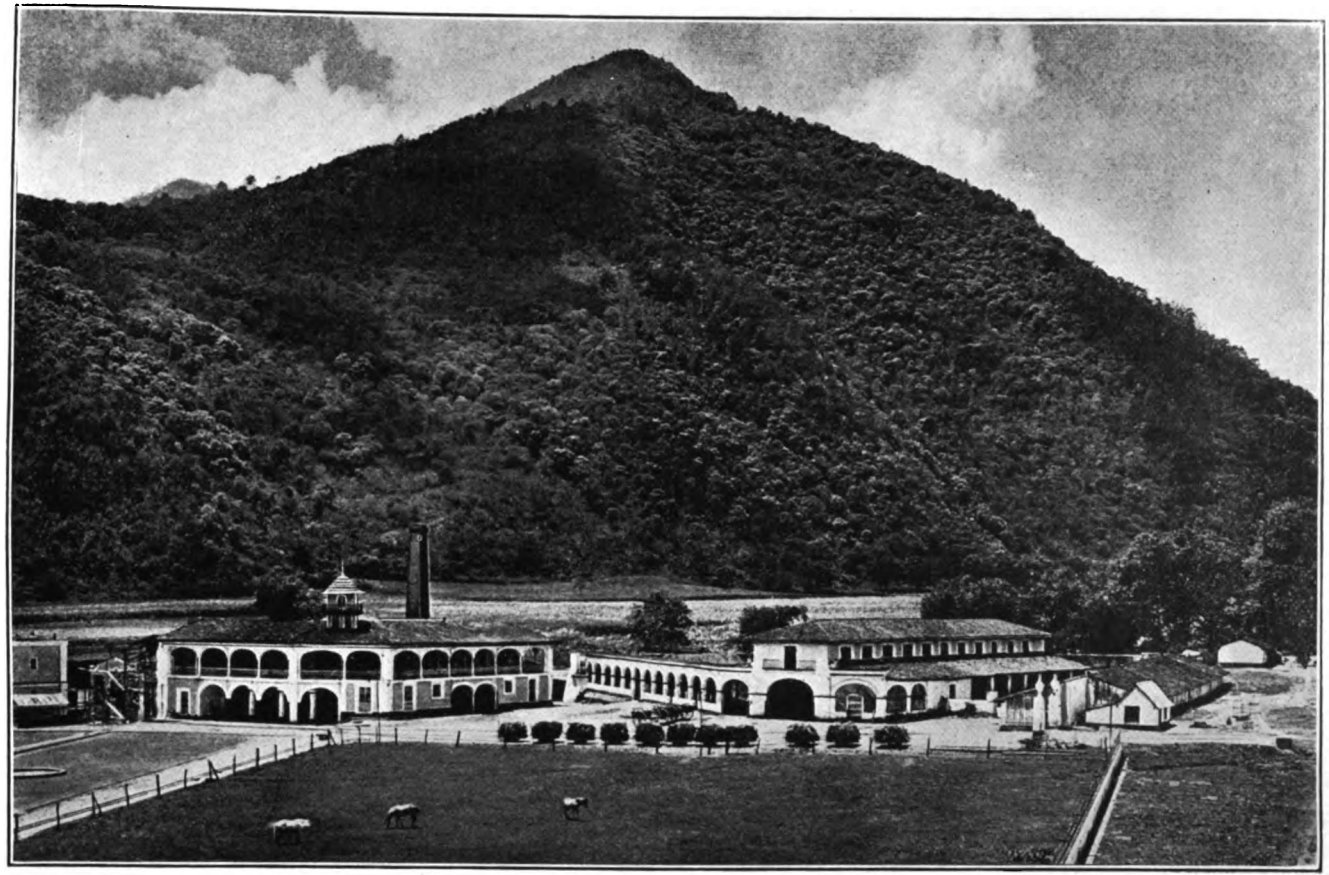

FARM HOUSE IN A COFFEE AND SUGAR ESTATE, NEAR ORIZABA, STATE OF VERACRUZ.

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the soil is neglected to engage solely in the working of mines the ruin of the country is certain."

This prophecy did not come true, but it is only within recent years that the productive resources of the land have been appreciated. It may be said that agriculture, even in the face of recognized progress, is yet in its infancy, and that the soil has been cultivated only on a very limited scale. Neither the proportion between the area now under cultivation and the arable land, nor the methods now in use for the exploitation and preparation of certain agricultural products are, in general terms, satisfactory.

There are two main causes for this state of affairs, both of which, however, are being persistently overcome. These are lack of laborers, and of means of communication, both restricting consumption by placing limits on the variety of production, and giving preference to ordinary products over those which are finer and more valuable. The mountainous and broken formation of the country has always been, and is still to a certain extent, an obstacle to rapid and economic transportation of merchandise, as it hinders the establishment of permanent currents of traffic either by land or water, and deprives the agriculturist of the advantages of natural irrigation in certain regions, which are for this reason, by nature at least, arid deserts. The farming population, likewise, is conservative, and accepts only hesitatingly the introduction of improved methods of cultivation.

The Government of Mexico has shown a decided interest in improving these conditions, and for years the Department of Promotion (*Fomento*) has endeavored to disseminate among the agricultural classes information tending to educate them in scientific methods of cultivation, irrigation, fertilization, drainage, and adaptation of crops to soil and climate. With this object in view the Department issues a monthly bulletin with articles on agriculture, mining and allied industries, and publishes from time to time works on special subjects, to be circulated among agriculturists. The results have been favorable, as the culture of the grape and other fruits and of forage plants, and the introduction of the bee and the silkworm, have been greatly stimulated thereby. The Department has also imported seeds and plants, and has encouraged agricultural fairs and expositions.

The cork tree, special kinds of flax, seeds of the mulberry tree for silk worms, and of foreign varieties of native plants, have been introduced. Research and investigation has been given to various industries, such as sugar cane, coffee, cotton and certain leguminous plants, and the State as well as national agricultural institutes are constantly aiding the farming community about them.

The Federal Congress passed a bill, in 1907, placing the National College of Agriculture (and Veterinary Surgery) under the jurisdiction of the Department of Promotion (*Fomento*)

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authorizing the Executive to acquire a farm in the neighborhood of the Capital for the purposes of the College, and providing for the establishment of Experimental Stations and Regional Schools of Agriculture at various points in the Republic, in connection with a Central Experiment Station to be conducted under the auspices of this National College.

Further encouragement to agriculture and irrigation was intended in the law of June 17, 1908, which authorized the foundation of a bank that could issue loans designed to promote agricultural and irrigational undertakings. (*Caja de Préstamos para Obras de Irrigación y Fomento de Agricultura.*) This bank was incorporated September 3, 1908, and is now carrying out the purpose for which the concession was granted.

On December 25, 1909, the *"Diario Oficial"* published the text of the law the object of which was to create National Agricultural Chambers. These are to interest themselves in agriculture, stock raising, forestry and derivative industries. The law authorizes also the establishment of such chambers in the Federal District and in each of the States and Territories, and even more than one may be established, if the Department of Promotion (*Fomento*) thinks that the agricultural interests or importance of a particular State warrant it.

During the same session Congress, in 1909, passed a law establishing an Agricultural Bureau in the Department of Promotion (*Fomento*). The Bureau is divided into five sections: (1) Instruction in Agriculture; (2) Agricultural Propaganda; (3) Rural Economy and Statistics; (4) Forestry; (5) Biological Exploration. It came into existence on July 1, 1910.

The preservation of the national forests, their replanting and methodical exploitation, have been matters of interest and investigation on the part of the Department of Promotion (*Fomento*), as the indiscriminate felling of trees at all seasons was gradually destroying the forests; this being especially the case since the advent of the railroads and the increased number of industrial establishments using timber instead of iron as constructive material, and wood instead of coal as fuel, the latter combustible not being obtainable at a fair price in sufficient quantities. A law has been enacted on this subject, the regulations stating in detail the duties of the officers appointed by the Government to the care of the forests; the rules and principles to which the exploitation of the forests and their products are subjected; the rules to be followed in making contracts and in cutting trees, and also creating a reservation of national lands for forestry. Already large areas have been set aside in the States of Chihuahua and Chiapas, and the Government purposes to continue this policy.

With the same object of fostering the agricultural interests of the country, agricultural expositions have been successfully held and prizes have been awarded for cattle, implements, ma-

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chinery and field products in general, such as flowers and fruits. During these fairs lectures are given on topics of interest relating to many important subjects.

A vital problem to be solved affecting the development of agriculture in the country is the lack of proper irrigation, as Mexico, owing to its topography, has no natural irrigation. The Government, realizing that a matter of such necessity could not be left to private initiative, framed a law (June 5, 1888) authorizing the Executive to grant concessions either to individuals or to companies for the use of the waters of the Republic for irrigation purposes or as motive power. The privileges granted in these concessions are:

(1) Exemption for five years from all Federal taxes, the stamp tax excepted, on all moneys invested in the survey, construction and repairs of the works mentioned in the concession.

(2) The introduction free of import duties for the first time only, of the machinery, scientific instruments and necessary apparatus for the survey, construction and exploitation of said works.

(3) The right to occupy gratuitously the public and national lands for the passage of canals and for the construction of dams or dikes and reservoirs.

(4) The right to expropriate for public utility any lands belonging to private parties, indemnification being previously made on the same basis as that governing railroad concessions.

The concessionaires are under the following obligations:

(1) To make a deposit or surety in bonds of the public debt.

(2) To submit for the approval of the Department of Promotion (*Fomento*) the plans, outlines and reports describing the work.

(3) To respect the rights of third parties, submitting any differences to the action of the courts, and to admit and defray the expenses of any inspecting engineer appointed by the Executive.

The law authorizes the Executive to grant free entry into the country of the machinery and apparatus necessary to the employ of the waters, either for agricultural or industrial purposes, if the concession has been granted by a State, provided the companies give securities for the performance of the work in accordance with the rules and limitations established by the Federal Executive. This law has been somewhat modified by others of more recent date, but the essential features remain unchanged.

In regard to still more advanced plans, the Department of Promotion (*Fomento*) sent to the Chamber of Deputies on December 4, 1909, a bill dealing with the question of water-rights. In it a definition was given of the waters subject to Federal jurisdiction, which are thus defined: (1) territorial waters of the sea:

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(2) the waters of estuaries, lakes and lagoons communicating with the sea or with rivers or creeks subject to Federal jurisdiction; (3) waters of navigable rivers and estuaries; (4) waters of rivers and creeks whose beds form boundaries with neighboring nations; (5) waters belonging to the watersheds of rivers and creeks mentioned in the foregoing section; (6) waters of rivers, creeks, lakes and lagoons, though they be not navigable, whose beds wholly or partly lie on the dividing line between States, or Territories, or the Federal District; (7) waters as in (6), though they be not navigable, of which the beds are situated in two or more States, States and Territories or States and Federal District; (8) waters flowing directly or indirectly into rivers, etc., subject to Federal jurisdiction; (9) waters situated in the Federal District or Federal Territories; (10) waters of canals dug by the Federal Government. All these waters are of public domain and inalienable, and the right to use them will be granted only when existing navigation is not prevented. Riparian proprietors are given preference in the use of such waters, but others are not excluded. Further safeguards are thrown around the utilization of all such waters either for irrigation or for water power, and a time limit is set against any monopoly in perpetuity. This bill was considered during the Congress of 1910. Its chief purpose is to specify with exactness the waters over which the Federal authority has jurisdiction, and to pave the way for uniform and extensive systems of national irrigation.

With this end in view, the Government has given publicity to a project depending upon the nationalization of all these waters. For the prosecution of the plan to improve the agricultural conditions of the country, the Department of Promotion (*Fomento*) will divide the country into ten zones, which will be systematically studied, with a general purpose of examining into their agricultural possibilities, and a particular purpose of reporting on how these may be increased by scientific irrigation. This does not exclude private initiative nor establish government monopoly, but in many cases where larger resources are necessary, the government will then stand ready to undertake improvements that might otherwise be too long delayed.

The Mexican Government has recently appointed a commission of engineers, under the supervision of the Department of Promotion. for the purpose of surveying, mapping and classifying all public lands that come under federal jurisdiction; and at the same time to rectify former surveys and grants which are now in dispute. This commission will also intervene in the surveys, and reports of public land denouncements.

The work has already begun in the State of Chihuahua, and will be carried therefrom to other sections of the northern part of the Republic.

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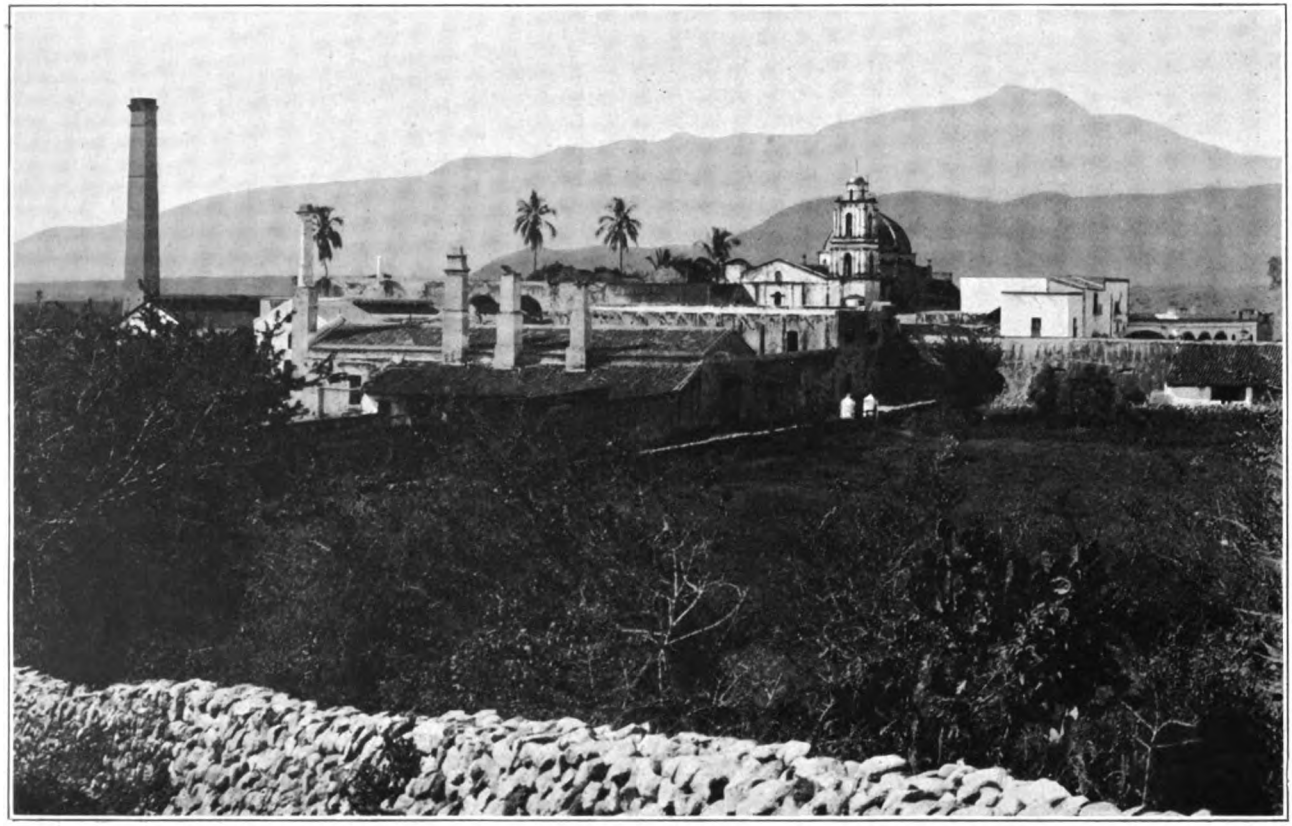

San Gabriel Sugar Estate in the State of Morelos.

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Agricultural statistics are at present incomplete, and it often results, therefore, that the figures given fall short of the actual production of the true output of a given crop. When products are shipped abroad, the quantities or values, as returned by the tax offices or by the custom houses through which they are exported, are known with greater accuracy. The Government has, on this account, prepared a series of tables in blank form which are to be filled out by landed proprietors and all others interested in agricultural progress. These forms cover information on the cost of crops, the amount of land devoted to them by owners or renters, and quantity produced, with relation to every article of the farm. It is hoped that by this means valuable and exact statistics will soon be available.

The following statements are, however, trustworthy in all essential details.

Indian Corn.—This furnishes one of the chief articles of food—the *tortilla*—of the common people of Mexico. It is cultivated in all the States of the Republic, but the States of Jalisco, Veracruz, Guanajuato, Puebla, Mexico and Oaxaca are as a rule the greatest producers.

The soil and climate are in general favorable to the cultivation of this cereal, and Mexico ought to be absolutely self-sustaining in her production of corn; but owing to the lack of adequate irrigation facilities, the crop, in years of drought, is insufficient for the local demand and corn has to be imported from the United States to meet the needs of the people.

Yet in average years the value of Mexico's corn crop exceeds that of any other natural product, not excluding the precious metals, if each be considered singly. The production in 1900 was estimated at almost 32,500,000 hectoliters (about 92,000,000 bushels). Some years it runs higher than this, others lower, but the crop is gradually increasing in proportion to the needs of the people, although more scientific agriculture will undoubtedly place Mexico among the great corn producers of America. It must be noticed that in many sections of the country two crops a year are planted. Both climate and soil are favorable to this method, and the inhabitants profit by it.

Indian corn, or maize (*maíz*), is the indigenous grain of America. The Indians of both continents knew it and subsisted largely upon it before the discovery by Columbus. Ethnology and philology agree that the original habitat of the plant was in the southern section of Mexico, somewhat north of the Isthmus of Tehuantepec. Over this area the Maya Indians lived and from them the cultivation of maize seems to have spread. Curiously enough, however, the word *maíz* is not from Mayan speech, but has been adopted almost universally from an Arawak source, and Columbus heard it from the Caribs, the first Indians he met when he landed.

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Wheat.—The *bajio,* or so-called lowlands of the State of Guanajuato, of the valley of San Martin and the country contiguous to Atlixco in the State of Puebla, and the Toluca valley in the State of Mexico, are famous wheat-producing regions.

Although natural conditions are not so favorable in Mexico for wheat as for corn, the former is, nevertheless, a staple crop and is grown to some extent in nearly all the States, but particularly Guanajuato, Puebla, Chihuahua, Coahuila, Michoacan, Sonora, Jalisco, Aguascalientes, and San Luis Potosi.

The crop is subject to great vicissitudes, chiefly owing to the uncertainty of the rainfall on the tableland and the lack of irrigation, and after bad harvests it becomes necessary to import the cereal from the United States.

There are 200 flour mills in the Republic, with capacities running from 10 to 100 barrels a day, serving their local customers.

Wheat was introduced into Mexico at the time of the conquest, as some of the grain happened to be among the stores of Cortes. It was for some time the only European cereal raised in Mexico, and although climatic conditions were propitious, the lack of moisture, which could be overcome only by irrigation, would frequently hinder its cultivation. Notwithstanding this drawback, the yield exceeded the average returns obtained in Euorpe, being, in some instances, as high as seventy fold. One variety cultivated in the neighborhood of Puebla, and called *trigo blanquillo,* was remarkable for its abundant yield. In 1677 its cultivation was forbidden by a decree of the viceroy and *audiencia* as injurious to health, but it was resumed in 1692.

Transportation offered by the railroads has given decided impetus to the raising of this grain, and Mexico is becoming a wheat-growing country. The area best adapted to its cultivation lies on the great plateau at an elevation of 6,000 to 9,000 feet (1,828 to 2,743 meters), and comprises some 52,000 square miles (134,580 square kilometers), over one-third of which could be planted in wheat without serious detriment to the other agricultural interests.

The Mexican plan of cultivation makes it possible to take off the land three crops every year—one crop of wheat and two of corn. The average yield of wheat per acre is about 20 bushels (7.04 hectoliters), and of corn about 50 bushels (17.61 hectoliters) on irrigated soils, and about 30 bushels (10.57 hectoliters) on dry land. Were this wheat area cultivated to its fullest capacity, the wheat and corn yield of one-third of the 52,000 square miles (134,580 square kilometers) would be of wheat over 111,000,000 bushels (39,115,600 hectoliters), and of corn over 400,000,000 bushels (140,957,130 hectoliters), according to conservative estimates. This immense supply would be available for

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foreign markets, as the home consumption would always be obtained from lands in the Republic outside of the above-mentioned area. Improved machinery and systematic treatment of the soil are increasing the yield, but full crops have not yet been produced nor has all the available region been by any means utilized.

In Mexico wheat is grown entirely on the tablelands and in places where irrigation is possible. The problem of irrigation is therefore intimately connected with the future wheat production of the country. Mexican wheat is small and hard, and when properly milled makes good flour. The supply of wheat flour is far below the demand, so that, as in the case of maize, the duty may at times, in the discretion of the Executive, be remitted so that it can be imported and given to the consumer at a reasonable price. The demand has increased considerably in recent years, so that even small farmers are planting wheat instead of maize in many places.

Barley.—The territory in which barley is grown in moderate quantities is approximately limited to a triangle whose apex is situated in the northern part of the State of Coahuila, the base being formed by the parallel of 18° 30′ north latitude from the Gulf coast to its point of intersection with the Pacific coast. But the richest and most prolific area is enclosed within a circle embracing the greater part of the States of Hidalgo, Tlaxcala, Puebla, and the Federal District, and whose center is equidistant from the cities of Mexico, Tlaxcala and Pachuca. From this circle the State of Morelos and a small part of Guerrero must be excluded, for here the production is inferior.

Rice.—Rice has been cultivated with a fair measure of success. There are two great centers of production, the States of Colima and Guerrero, while a third important area is in the municipalities of Teapa and Jalpa, in the State of Tabasco. These three centers are situated near the parallels of 18° and 19° north latitude. To the east of them the production gradually falls off, and the zones in the States of Michoacan, Puebla and the rest of Tabasco are of less importance.

The production of the principal grains of Mexico are, according to the *Anuario Estadistico* for 1906, the latest complete government publication on the subject, as follows:

Rice—31,720,785 kilograms (1,165,000 bushels of 65 pounds), 4,125,420 *pesos.*

Barley—2,683,368 hectoliters (7,594,000 Winchester bushels), 7,353,212 *pesos.*

Corn—38,786,781 hectoliters (109,767,000 Winchester bushels), 120,999,789 *pesos.*

Wheat—350,051,473 kilograms (12,877,000 Winchester bushels), 31,968,457 *pesos.*

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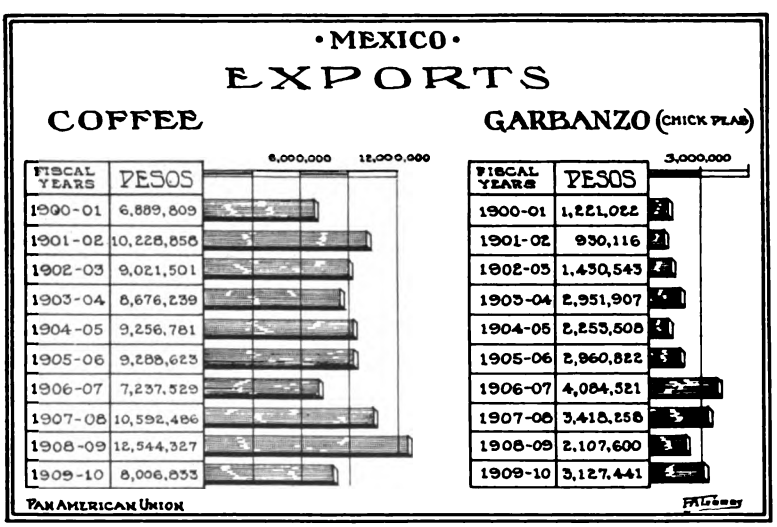
The *frijol*,* or Mexican bean, is, with the *tortilla*, the staple article of food of the masses of the people. It is palatable and nutritious, its value in this respect being high. It is a leguminous plant of the order of *phaseoli* (*vulgaris*), and is found all over the world. Tradition ascribes its origin to America, although this is denied by certain scholars; yet it is admitted that in prehistoric tombs of the Incas beans have been found which produce the same seed as the modern frijol.

The frijol is grown in every State of the Republic, but the production of Jalisco and Veracruz leads, with an annual value of about 15,000,000 *pesos*, but the product is consumed almost altogether within the country. The export amounts to only 550,000 *pesos*, the greater portion of which goes to Cuba.

Garbanzos are the larger, white and round beans, appearing regularly at all meals on the table of the Spanish. They are grown in many Mexican States, but those in the low-lying tropics, such as Yucatan, Tabasco, Campeche and Tlaxcala, produce practically nothing. Contrary to the use made of frijoles, the garbanzos are largely exported, over 2,000,000 *pesos*' worth being sent abroad yearly, principally to Cuba and Spain, to meet the demand of the Spanish, whose crop is not sufficient for their own wants.



*This word is spelled in many ways, according to its history or nationality. Frejol, frisol, feijão (in Portuguese), etc., are common. In Spain this is the same as the *judía*, a bean that traces its ancestry back to the dark ages.

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Coffee.—To the north of the 23d parallel there is no State that produces coffee in abundance. The zone with the largest comparative production is to be found contiguous to the Isthmus of Tehuantepec. In general, the States of Veracruz, Oaxaca, Chiapas, Tabasco and Colima, with some districts of the States of Puebla, Morelos, Jalisco, Hidalgo, Michoacan and Mexico, and of the territory of Tepic, produce coffee crops, and while Veracruz leads all other States in the quantity of its output, the State of Colima and the Uruapam district of the State of Michoa-

COFFEE AND BANANA PLANTATION NEAR CORDOBA, STATE OF VERACRUZ.

can yield an article that is especially esteemed by connoisseurs for its delicate flavor. From a plantation in Colima a shipment of the berry is annually made to Berlin for the table of the Emperor.

Mexican coffee is of excellent quality. Where careful attention is given to its cultivation the berry can be made to rival that of any other country. It is claimed also that it is possible so to increase the quantity produced that the output will equal that of all countries, except Brazil, combined. Mexico occupies, as a rule, the fourth place among the countries from which coffee

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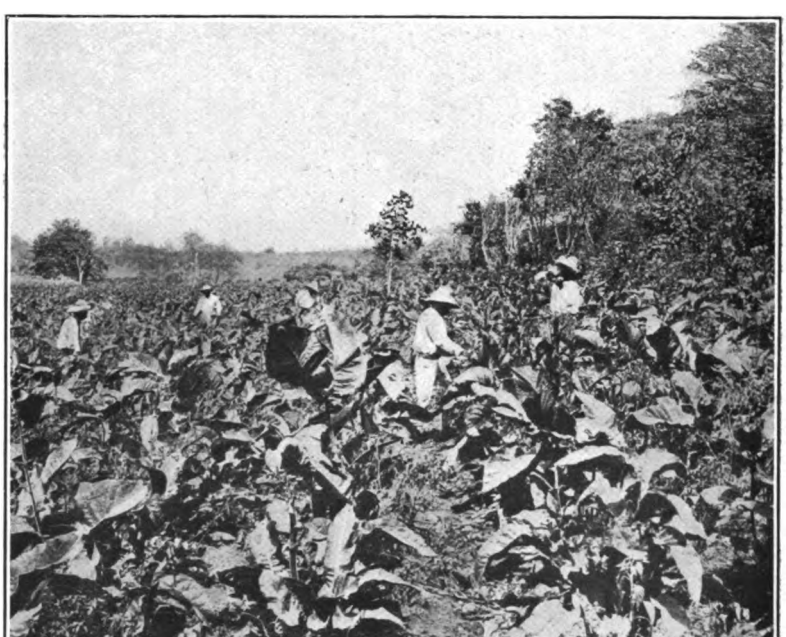
is supplied to the markets of the United States, and that country takes from Mexico the larger proportion of the coffee crop of the year.

Coffee is not indigenous to Mexico, but was originally brought from the West Indies about 1790. It was not until 1818, however, that the plant was properly cultivated there, when Don Juan A. Gámez, called the benefactor of Cordova, demonstrated that Mexico had the soil and climate essential to the cultivation of coffee. The plant flourishes best in well-watered and drained regions, in a hot, moist climate, at considerable elevation, in a rich soil. It can withstand light frosts only. Below 1,500 feet (457 meters) the plant seldom thrives, while above 5,000 feet (1,524 meters) artificial shelter against cold winds is required. In all localities, also, shelter of some kind against too fierce a sun is necessary.

The amount of coffee grown in Mexico varies from 35,000,000 to 50,000,000 kilograms (77,000,0000 to 110,000,000 pounds), and the quantities exported fluctuate around 18,000,000 kilograms (39,600,000 pounds).

Tobacco.—The cultivation of tobacco was carried on before the conquest of Mexico by the Spaniards. The fine quality of



TOBACCO PLANTATION NEAR CORDOBA, STATE OF VERACRUZ.

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the leaf grown in certain portions of the Pacific slope, and the large output of the State of Veracruz, encourage hope that the production of tobacco will become as profitable an industry in Mexico as it is in Cuba.

The plant was called *yetl* by the Aztecs and was used by them and other native races, but it soon became popular among the Europeans. Its cultivation was not restricted for nearly two hundred years, but in 1764 the Crown appropriated the right to the sale and manufacture of the plant, its culture being limited to the districts of Orizaba, Cordoba, Huatusco and Zongolica. The revenues derived from the monopoly in 1783 amounted to $777,651, and in the first year of the nineteenth century about $4,000,000 silver accrued to the Government from this source. The principal factories at that time were situated in Mexico and Querétaro, their annual product amounting nearly to $7,500,000, one-half of which belonged to the Crown.

In 1868 foreign cultivators and manufacturers, principally from Cuba, went to Mexico, where they began to cultivate the plant on an extensive scale. The French were successfully active in the upper valley of the Papaloapan River, where tobacco leaf, as silky as and even more aromatic than that of the Vuelta Abajo in Cuba, was produced.

Tobacco is raised along the mountain country lying between Victoria in the State of Tamaulipas, and Campeche in the State of the same name; also on the Pacific slope of the States of Chiapas, Oaxaca, Guerrero, Michoacan, Jalisco, Colima, Sonora and the Territory of Tepic; in the interior of these States also, as well as in the States of Veracruz, Tamaulipas, Tabasco, Mexico, and Puebla. The soil in the valleys along the rivers on the Pacific slope seems to offer the elements especially suited to the requirements of tobacco, and the extent of the tobacco region is estimated at one hundred times that of Cuba.

Quantities of the raw material produced in the country are exported, but Mexico has cigar and cigarette factories to manufacture whatever is not exported. There is a steady increase in the use of all the various forms of tobacco except the rapé or snuff, the demand for which has almost ceased. The use of cigarettes is extending, having doubled in five years, and the homemade article has gradually driven those from Habana out of the Mexican market.

Cotton.—Cotton has been cultivated in Mexico from time immemorial. Prior to the advent of the Aztecs in the valley of Mexico their predecessors knew and practiced the art of cotton-spinning.

Although Mexico is so thoroughly adapted by soil and climate to the production of this fiber, and although there is an acreage sufficient to produce it in very large quantities, cotton is still im-

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ported into Mexico. In 1900 over 18,000,000 pounds (8,000,000 kilograms), valued at 1,734,000 *pesos,* were imported, and at the same time almost 49,000,000 pounds (21,800,000 kilograms) were grown. During the (fiscal) year 1909-10 over 8,000,000 *pesos'* worth of unmanufactured cotton was imported, although the crop was estimated to be 40,000,000 pounds (18,000,000 kilograms) or 80,000 bales.

Cotton is produced on the seaward slope of both cordilleras and also in the interior of the country. The great cotton belt is the Laguna district, which includes portions of the States of Chihuahua, Coahuila, Nuevo Leon, Tamaulipas, Durango, Zacatecas and San Luis Potosi. This district produces probably 90% of the cotton grown in the Republic. On the Gulf side the State of Veracruz, and on the Pacific side all the States from Sonora to Chiapas, have cotton areas. In Sonora, the valleys of the Yaqui and the Mayo; in Sinaloa, the valley of the Fuerte; in Tepic, those of Tepic and Santiago, and in Jalisco, Michoacan, Guerrero, Oaxaca and Chiapas are cotton lands with substantial production, but with better cultivation and at small cost the crops could be made enormous.

The fiber is of good length and strength; thinner than that of American cotton, less silky and not so clean. The plant suffers from certain pests, of which the *conchuela* is perhaps the most common, and the "boll weevil," the principal pest of all cotton-growing countries. The "boll weevil" came originally from Mexico and crossed thence into Texas, but the Laguna District, being high and dry, and depending largely upon irrigation for water, has hitherto been encouragingly free from it. Information on methods of pest extermination is freely given by the Government to cotton growers.

Cotton is still cultivated, over the older areas devoted to it, in a primitive way, the plow until recently being little used, and nature being left to exercise her energies unaided. Modern scientific agriculture has, however, been introduced with noticeable success.

Cotton is baled under pressure of 3,000 to 4,000 pounds (1,360 to 1,847 kilos.), square bales of about 500 pounds (226.79 kilos.) each resulting. As in the United States, also, buckles are used in baling, so that methods in the two republics are similar. Planting takes place in March (in the Laguna district, at least), and picking begins normally toward September.

The consumption of raw cotton in Mexico is estimated at something over 100,000 bales annually, but native production is not enough to satisfy domestic consumption, so that about 50,000 bales are imported during the year. This is in addition to cotton beyond the raw state and cotton textures, of which considerable

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quantities come from abroad, for the cotton factories of the Republic do not as yet meet the demands for all the finer products.

Rubber.—The rubber tree grows wild in many parts of Mexico. It abounds in the warm latitudes of the States of Veracruz, Tamaulipas, Tabasco, Guerrero, Oaxaca, Chiapas, Colima, Michoacan, and the Territory of Tepic. In several instances the cultivation of the tree itself in plantations has been seriously undertaken, but the natives, not appreciating the value of so important an element in their natural resources, have for many years been accustomed to exhaust the milk from the tree, boil it and take the rubber, made into balls, to market without

SIX-MONTHS'-OLD RUBBER PLANTS.

further precaution. Great numbers of trees have thereby been destroyed.

While certain tropical regions in the States mentioned are undoubtedly suited to the cultivation of the *castilloa elastica,* the variety indigenous to Mexico, it is acknowledged that no region in the Republic is capable of competing with the extensive rubber region of Brazil. Many planters do, however, plant rubber trees as shade for cacao trees, and when so grown the former may be cultivated at a nominal cost, as shade for the latter is in any case necessary and the cost of providing it can be charged against the cacao. This combination is attractive, as two valuable crops are produced on the same ground and under one management. These

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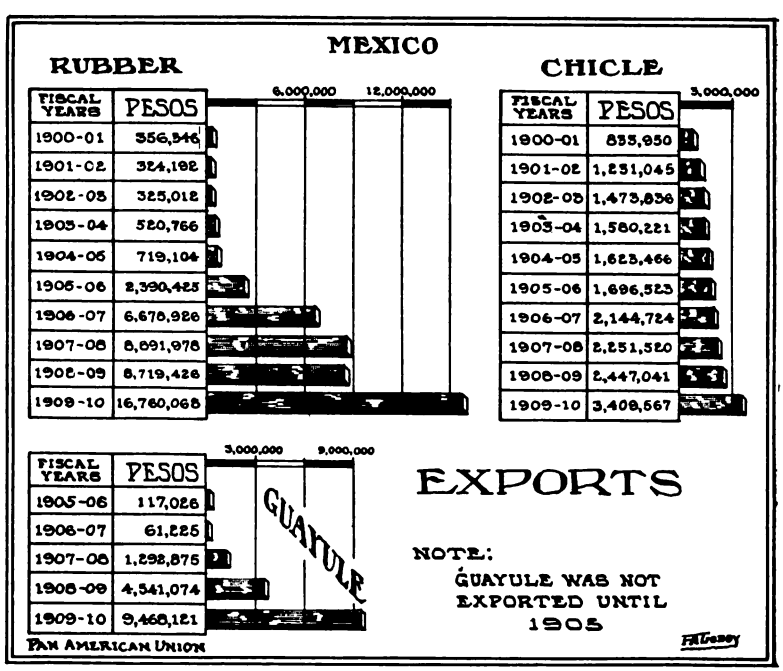
problems must be investigated with great care, however, as it ought not to be taken too readily for granted that the rubber tree is an inexhaustible source of wealth.

In the region contiguous to the Isthmus of Tehuantepec there are hundreds of square miles adaptable to the rubber tree where it is found growing wild to-day. The hot climate is suitable, and there is an abundance of the best land, damp and low-lying, near the seashore or on the banks of numerous rivers. It is in this region that many plantations have been started.

The tree yields when six or seven years old, but tapping should not begin, as a rule, until it is nine or ten years old. The method employed for this operation is of great importance and requires close attention. In fact, although the demand for rubber is constant and seems never to be equal to the supply, an investment in a plantation should in every case be studied on its merits, and personal inspection of all details is advisable.

Guayule.—This shrub, scientifically known by the botanical name of *parthenium argentatum,* grows in the mountain regions of the States of Zacatecas, Nuevo Leon, San Luis Potosi, Coahuila, Durango, Chihuahua, and Sonora, small areas of like soil and climate being found in Texas also. It is about three feet



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high, and was, until recent years, considered as of no value, and even a detriment to the land it occupied.

Undoubtedly, however, the Indians knew of the property of the guayule juice, for the name would seem to have come from the colloquial expression *"hay hule,"* meaning, in Spanish, "here's rubber." Whether or not this can be accepted as the true derivation, it is certain that they used it in a domestic way for this reason.

The plant grows at an altitude of 3,000 to 6,000 feet (914 to 1,828 meters), blossoms in September or October, propagates itself slowly, and dies after fifteen years of growth. It produces from 6 to 12 per cent of rubber, which differs from the best Para quality in some respects, but for many purposes for which rubber plays an important part in modern industry, it has received world-wide recognition. Efforts to preserve the plant by allowing the main part to spread over the ground have not been completely successful. Undoubtedly it can be cultivated, but the method demands further scientific study.

In 1876 the State of Durango exhibited in Philadelphia extract from guayule, but it caused little comment. In 1890 the Indians of that neighborhood called attention to it. In 1896 it was examined critically and in 1899 patents were taken out for the production of the extract. In 1903 factories were started for the process, in 1904 this became a real business, and made rapid progress from that date through 1906 to the present.

There are four distinct advantages in guayule. It grows in an otherwise sterile soil (if this contains a due amount of lime), it requires only a subtropical climate, healthy at all times, it can be gathered all the year round, and commercially it is profitable, even considering the low per cent of rubber content.

By the end of the year 1910 the guayule industry has assumed immense proportions, and has been the cause of the rapid growth in population and activity of a large area of Mexico. It is estimated that $65,000,000 (gold) of capital is employed, and that there are $65,000,000 (gold) of shrub in sight in the State of Coahuila alone. During the last four months of 1910 the output of guayule amounted to about 6,000,000 pounds, valued at $6,000,000 (gold).

Chicle.—Among the chief productions of Mexico is the gum known as *chicle,* which exudes from the *achras sapota,* a tree found growing wild in the northern portion of South America, in Central America, and in the Mexican States of Yucatan, Campeche, Tabasco, Chiapas, Veracruz, Oaxaca, Puebla, Jalisco, San Luis Potosi, and the Territories of Tepic and Quintana Roo.

As yet the systematic cultivation of the *sapota* or *zapote* has not been carried on to any great extent, but the tree begins to give a good yield when about eight years old. In the wild state

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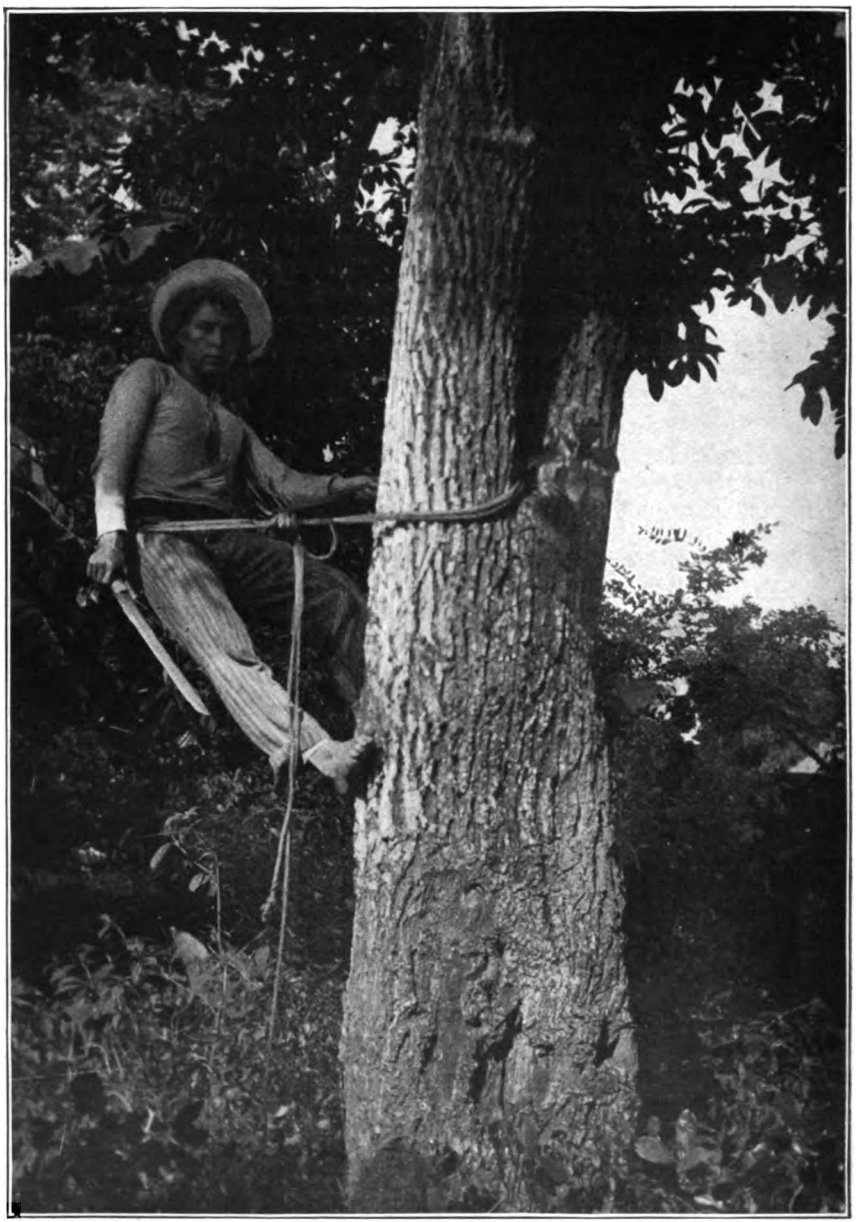

A Chiclero at Work.

The gatherer of the Chicle gum climbs the tree by a native rope device. He carries with him the machete with which he makes the incision for collecting the gum.

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it is usually found in groups, and the natives are the best judges of the tree and its probable value. They gather the chicle in the forests along the rivers, these *chicleros,* as they are called, being very expert and agile in their work. The method of collecting the gum is quite like that employed in the rubber industry; trees are tapped by an incision around them and the sap flows into the lower notch, at which point a cup is attached to collect the sap. By care, production from a tree may be continued even to twenty-five years, but too deep an incision will kill. The Government is exercising commendable restrictions over the various stages of gathering, so that the forests shall be uninjured.

All chicle exported is used in the manufacture of chewing gum, as it forms the basis for that popular article, no substitute having been found for it. The great proportion goes to the United States ultimately, although in the reports Canada receives large shipments, because the preparation of the raw material into a refined article, as conducted in that country, lowers the duty cost into the United States. Upwards of five and one-half million pounds of chicle are annually imported into the United States, valued at almost $2,000,000.

Vanilla.—As far back as the time of the Aztecs the vanilla was used to spice the chocolate. The Spaniards, quick to see the value of vanilla as an article of export, began the cultivation of the aromatic pod. For a long time the former province of Veracruz supplied the whole world with vanilla, until the Bourbon Islands and Java waged competition against it.

The vanilla of Mexico is the superior of all other varieties as to aroma, and the pod yields a much larger quantity of essential oils. In the markets of the United States about one-fourth of the imports of vanilla beans comes from Mexico, at two or three times the price paid for the product of other countries.

Vanilla is to a large extent cultivated in plantations, on damp but not swampy or muddy lands in the tropics, where the necessary shade can be secured, a condition found in all the States contiguous to the Isthmus of Tehuantepec. The plant begins to yield thirty-nine months after planting, and continues to yield during ten to twelve years. The average yield is from ten to twenty pods to a vine, artificial fertilization producing much more. The cultivation of vanilla has many advantages, among others the fact that corn and similar crops can be grown in conjunction with it, while on coffee plantations it can be made to play a secondary but profitable part.

Vanilla, or as the Spanish word is spelled, *vainilla,* is a genus of climbing tropical orchid, with thick leaves and spikes of large but not very beautiful flowers. *V. aromatica* is the best variety and is grown now in many parts of the world, but other varieties are often used in its place.

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Sugar Cane.—The cultivation of sugar cane was among the agricultural improvements introduced into Mexico by the Spaniards, as early as the time of Cortes, who had a sugar mill near Cuernavaca, which is still in operation in the possession of his descendants. To-day there is hardly a crop which, as far as natural conditions in Mexico are concerned, rests on a surer basis. Sugar cane grows in practically every State in the Republic, and it is due to the primitive methods employed, as well as to former difficulties in the way of transportation, that the Republic has not entered more largely into the sugar export trade.

Great fertility of soil abounds in the Gulf States and the rain-

"La Aurora" Sugar Factory, Culiacan, State of Sinaloa.

fall is ample. In the inland State of Morelos, however, where the largest quantity of sugar is produced, irrigation is necessary, as is also true of sugar lands on the Pacific coast. Lands on the elevated levels yield less than those on the lowlands, but recently attempts to grow the sugar beet on the plateau have met with decided success. From 25 to 45 tons of cane an acre is stated to be the average yield on the elevated plantations, and from 40 to 60 tons in the tropical lands. Replanting is necessary more often in the highlands than in the lowlands, where every seven years is sufficient. If modern machinery is employed, and the plant is under an experienced engineer, the yield can be materially increased.

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The cane, especially on the Gulf slope, grows to an enormous size, and does not need a heavy outlay for its cultivation. In fact, Mexico is in many respects an ideal sugar-producing country, and it might rank with Cuba if as much attention were given the crop in one country as in the other. The best-known plantations are and have been owned for generations by old families who possess immense tracts of land and have an abundance of cheap labor at their command. Their mills are primitive and they are guided by conservative motives which retard progress. When modern methods are introduced the sugar resources of the country will greatly increase. As it is, the national production about balances the national consumption, and what amount is imported goes to meet the demand of a certain quality of consumers, while what is exported serves its particular purpose abroad. Morelos is the heaviest producing State, Mexico the lightest, as a rule.

The crop for 1907-08 amounted to almost 123,500,000 kilograms (271,700,000 pounds), to which must be added 71,000,000 kilograms (156,200,000 pounds) of molasses and 50,000,000 kilograms (110,000,000 pounds) of *panela* (brown sugar). Yet it is safe to say that not more than ten per cent of the land available for the planting of sugar cane is utilized. There is yet a large field in the country for the best class of refining mills, although there are over 2,000 sugar mills, large and small, in Mexico, and the tendency is both to increase the acreage under cultivation and to modernize the methods used in the refining of the raw material.

Sugar production by States is shown in the accompanying table:

Production of sugar and molasses by States.	Kilos.	
	Sugar.	Molasses.
Campeche	317,778	293,336
Chiapas	776,300	655,700
Colima	1,545,000	770,000
Guerrero	2,765,750	3,331,000
Jalisco	5,602,000	5,985,650
Mexico	210,485	1,022,839
Michoacan	8,481,560	5,985,464
Morelas	48,219,733	18,300,619
Nuevo Leon	1,206,000	600,000
Oaxaca	1,697,589	3,620,973
Puebla	18,157,000	8,907,000
San Luis Potosi	2,035,352	3,906,350
Sinaloa	6,347,300	2,710,000
Tabasco	2,045,000	1,186,000
Tamaulipas	1,412,000	1,530,000
Tepic	3,300,000	1,100,000
Veracruz	18,242,735	10,130,179
Yucatan	923,730	912,463

Kilogram=2.20 pounds.

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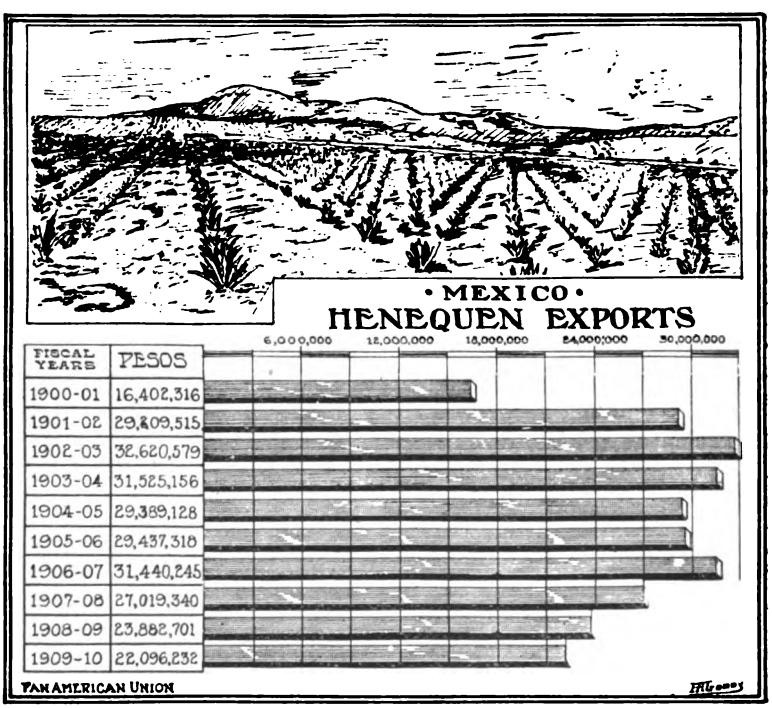
Henequen.—Chief among the numberless fiber plants produced in Mexico is the *henequen* (*Agave rigida*), also called sisal grass or hemp, the natural home of which is the peninsula of Yucatan. It belongs to the *maguey* (agave) family, and was called *metl* by the Aztecs, who from time immemorial used it as an article of food, the leaves likewise being utilized for roofing, the fiber for weaving, and the juice for the preparation of a drink called *octli*, the *pulque* of to-day. Paper was made from the pulp of the maguey, and this product resembled the papyrus of the ancients; had it not been for its wonderful durability rare and valuable Mexican manuscripts would have been forever lost.

There are several varieties of the plant, known by Maya names, which require but little or no cultivation and but small outlay. Henequen, sisal, ixtle or istle are indigenous words, and in their use much of the civilization of early Mexico can be traced. Henequen is one name given to one product of the maguey, and this has a recognized trade significance, but it has not displaced sisal in commercial nomenclature, for although henequen is exported from Mexico, it is lost or concealed under the term sisal or istle when imported into the United States.



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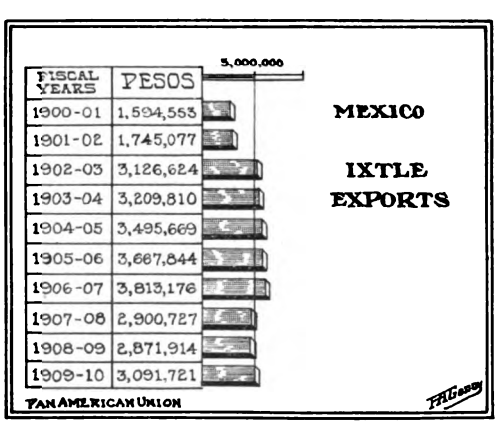
Henequen (sisal) is descriptive of the fiber made and exported from the States of Yucatan, Campeche, Chiapas, Jalisco, and a few others of less importance. The manufacture of fiber from the *agave sisalensis* is the basis of the prosperity of Yucatan, and represents one of the chief values in the list of Mexico's agricultural productions. The plant resembles the century plant familiar in hot-houses of the United States; it grows best in arid and stony regions where other cultivation is impossible. Propagation is effected by suckers, maturity is attained in about five years, and replanting is required about once in 15 to 20 years. The yield of the fiber is influenced by the weather conditions, humidity retarding growth. There is no fixed harvesting season, as this is determined by the individual maturity of the plant. The traditional skill of the natives is here relied upon for the gathering, which takes place in a way not so very dissimilar from that which must have been practiced ages ago.

In Yucatan the average plantation is 500 acres (202.34 hectares); it is estimated that about 100,000 acres (40,468 hectares) are at present under cultivation, giving employment to 90,000 Indians, many of the families having lived for generations on the same plantation. After the leaves are cut down and the spiney covering removed, the threads are extracted in bundles, bleached, dried, pressed into bales, each weighing about 400 pounds, and in this shape sent abroad. Its further manufacture into rope, cordage and cable is then completed at the foreign factory.

Ixtle, which is extracted from the leaves of the *lechugilla,* an *agave* (*ixtle*) or *maguey manso,* is another important fiber imported into the United States as istle or Tampico fiber, for the manufacture of many articles. Coahuila is the largest producer, but San Luis Potosi, Jalisco, Nuevo Leon, Oaxaca and other States add considerable to the total output. Ixtle lands are to-



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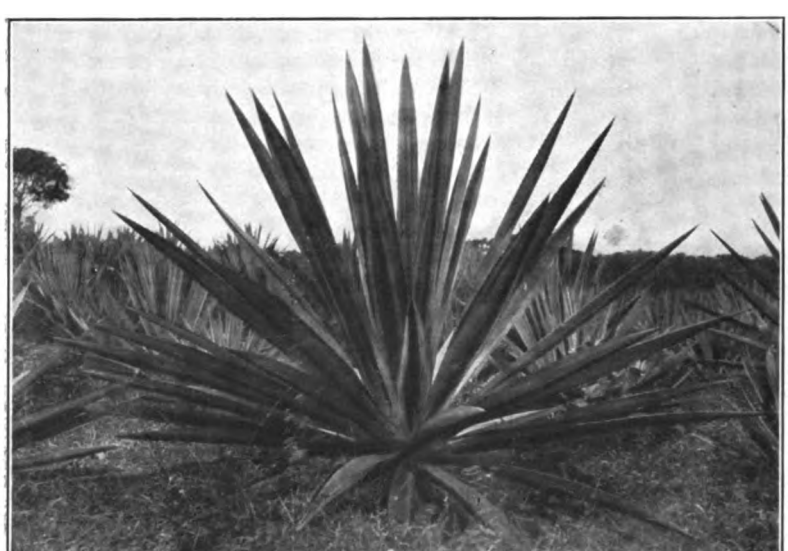
day among the most valuable in the Republic, as the plant requires but little cultivation and propagates itself annually. Being an "atmospheric plant," it is not dependent upon the rainfall, although a moderate amount of moisture assists in its growth, and the resultant fiber is better in fairly wet than in very dry seasons. The work of gathering and preparing the *lechugilla* is disagreeable and there is difficulty in obtaining labor for it; a number of machines have been invented to take the place of manual labor, but there is still a reward for successful mechanical applicances to serve the purpose.

The United States and Germany take almost all of Mexico's *ixtle,* the exports of which have reached nearly 18,000,000 kilograms (39,600,000 pounds), valued at nearly 3,000,000 *pesos.*

Jute and Flax.—Jute is found in its wild state in various parts of the Republic, more especially on the coastal plains of the State of Veracruz. Recently successful attempts have been made toward its cultivation, but not on a sufficiently large scale, on account of labor difficulties, to affect the importation of raw jute from Calcutta. Similar attempts have been made also with flax. The textile requirements of the Republic are now practically supplied by factories in the country, the most important one being situated in the State of Orizaba. There is a linen mill in Mexico City.

Zapupe.—The growing of this plant beyond the experimental stage was only begun in 1905, when considerable interest was



ZAPUPE PLANT.

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taken in the industry, the result being that over 5,000 acres (2,023 hectares) have been placed under cultivation in the State of Tamaulipas, and additional large tracts are being cleared. It produces a fine white fiber, strong, brilliant, soft and pliable in texture, and is said to be far superior to other similar Mexican plants in quality, and to have more rapid growth, yielding a good return in three years, while the others require five to seven years.

Seven kinds of *Zapupe* are known in Tamaulipas, but only three are cultivated—the *estope,* or blue; the *tantoyuca,* or long leaf; and the *tepezintla,* or short leaf, this last being the most popular and productive. A light, sandy, well-drained soil is the best, and in it the plant grows hardily and vigorously with but little attention, after it is once properly started. Planting can be done at any time of the year, although it is best to complete the operation either before the beginning or at the end of the rainy season (which is April to October). In full development the *zapupe* is strong and formidable, and will not be molested by animals of any kind, so that on this account fencing may be avoided. The leaves may be harvested at any time, but are usually cut every three months.

The uses to which *zapupe* may be adapted are almost unlimited. From its fiber is manufactured fine cord and rope, and when the fiber is divided by machinery into 100 parts or threads, it has been utilized to replace silk. The entire output is consumed in Mexico.

Escoba.—In the State of Colima there is an indigenous fiber plant called *escoba* (*centaurea salmantica*), a shrub growing from 18 inches to 4½ feet high (½ to 1½ meters). The word means "broom" and is derived from the fact that the natives cut it each year, and after drying it bind it into small bundles, which are then used for sweeping. Native ropes are also made of it after the bark is stripped off. The *escoba* grows in all the open cleared land throughout this region, and upon being cut at the end of one season is sufficiently matured for cutting again at the end of the next rainy season.

Pita.—Another fiber plant is *pita* (*furcrea gigantea*), which grows wild in the northern section of the State of Veracruz. This is quite distinct from *sisal* and *zapupe.* In two or three years it has reached full maturity, after which the leaves can be removed every three months. *Pita* fiber is now extracted by hand in small quantities for local consumption, and is used in the manufacture of seines, nets, matting and numerous other articles requiring a fiber of unusual strength and pliability, such as lariats and hammocks.

Zacatón.—Among the numerous Mexican plants utilized in the industries of other countries is *zacatón,* or broom corn. It belongs to the family of *graminaes* (*epicampes macroura*) and is

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found wild in many sections of the country. Having been classed as a weed it has not been cultivated to any extent. The valuable part of the plant is the root, which may be gathered at all seasons of the year, after which it is cleaned of its thin skin and all objectionable matter. These roots, when bleached, sorted and packed in bales, are compressed by primitive means for shipment. It has been proven by experiments that cultivated zacatón is superior to the wild species. France and Germany are the principal markets, fully 90 per cent of the entire yearly shipments from Veracruz going to these countries. The yearly export, under the name of *Raíz de zacatón* is something over 4,000,000 kilograms (9,680,000 pounds), valued at 2,000,000 *pesos.*

Cacao.—(*Theobroma,* in Greek—the food of the gods) is another plant indigenous to Mexico. It has been cultivated by the aborigines from remote times, and from its bean they made their drink *chocolatl* (chocolate), which was considered to have great sustaining virtues, and Cortes, speaking of the general adoption of the beverage by his soldiers, in his first letter to Charles V, says: "He who has drunk his cup of chocolate travels a whole day without taking other food."

Ever since chocolate came into general use in Europe, in the latter part of the seventeenth century, the high grade cacao has been furnished largely by the States of Tabasco, Jalisco and Chiapas. The Mexican home consumption is very large, yet the production no more than meets the demand, as only a small quantity is exported, and that to Spain.

Cacao requires a warm and moist climate, the best lands lying between sea level and 1,600 feet (487 meters) above, in localities protected from strong winds. Although there are many districts in Mexico affording the necessary conditions of climate and soil, the cultivation of cacao is chiefly in the hands of the Indians, who raise it on a small scale and carry their crops to market, where they are bought by merchants for shipment to the large consuming centers. The tree begins bearing four years after planting and may yield three crops a year. The maximum production is reached about the tenth year.

As the cacao bean is the basis of the manufacture of chocolate and by-products like cacao butter, its cultivation offers a good field for profit. The annual production amounts to a trifle over 2,700,000 kilograms (5,940,000 pounds), valued at 2,168,000 *pesos,* which varies with the years.

Oleaginous plants.—Mexico produces several plants yielding oils, both industrial and succulent, but no great industry has as yet developed from them. The *piñon* (*jatropha curcas*), yielding 16 per cent of a strong cathartic oil; the *riccinus communis*

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(castor-oil bean), yielding 40 per cent of that oil; *ajonjolí* (*sesamun indicum*), sesame, yielding 33 per cent of a soft, sweet oil; the peanut (*arachis hypogaea*), which yields an oil much prized in France; and many others but little known. Their products are exported to meet special demands or tastes abroad.

The *vine, olive and mulberry trees.*—Experiments in introducing the industries relating to these plants date as far back as the time of Cortes, who himself encouraged them. The silkworm industry made fair progress at first, but competition from Spain and the Philippines caused its neglect. Efforts to revive it are occasionally being made.

"Cultivation of olives and the vine labored under severe restriction. Admirably adapted as soil and climate were for both purposes, the few plantations of olives were merely allowed to exist because they belonged to pious institutions, while as to the vine, the viceroys were instructed not to permit the planting of new cuttings, nor even the replacing of vines in decay. Wine could be made only on condition of paying taxes to the Crown."* The Department of Promotion (*Fomento*), however, encourages the culture of all these plants. Trial plantations have been successful, and there is hope that production may be commercially profitable.

Mexico is not yet a recognized wine-producing country, but serious efforts are constantly being made, and table wines in considerable quantities are on the market. Some of the land best adapted to viticulture is in the vicinity of Parras, State of Coahuila, where the industry has been well established. Several varieties of vine have been imported from abroad, and cellars built. The grape most used is that known in California as the "Mission" grape, introduced in early times by the missionary fathers from Spain. Grapes as an article of table food are grown in practically every State, the yearly production averaging about 3,000,000 kilograms (6,600,000 pounds), valued at nearly 330,000 *pesos*. Coahuila, Chihuahua and Durango show the largest crops.

As regards olive and mulberry trees, abundant cuttings have been imported and the industries connected with them have received attention in the States of Coahuila, Puebla, Jalisco, Michoacan and Guanajuato. The entire subject merits close study from the economist, the agriculturist and the commercial prospector.

Fruit Culture.—This is an industry for which Mexico affords almost unlimited facilities, and which as yet is only in its infancy.

The characteristic fruits of cold and temperate climates can

*Bancroft, History of Mexico, Vol. III, p. 613.

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be grown with success in the higher altitudes, while all the tropical and sub-tropical fruits are indigenous in the *tierra caliente*.

In the cultivation of orchard fruits—apples, pears and the like—there is reason to believe that a retrogression both in the quantity and flavor of the output has taken place. There are spots in the Valley of Mexico, such as the neighborhood of San Angel, where large *huertas* (gardens) were once in flourishing condition, supplying the markets of the capital with pears, apples, peaches and apricots of a quality superior to that which they show at present. It is an anomalous condition that American pears and apples, chiefly from the State of California, should be imported into Mexico in considerable quantities and should supply the tables of the well-to-do almost to the exclusion of the native product. Both the climate and the soil of Mexico in the temperate region afford every advantage for the cultivation of such fruits, and all that is needed to obtain a product equal if not superior to the best imported article is the introduction of modern scientific methods of cultivation.

Strawberries of the finest flavor are grown all the year round in the neighborhood of Irapuato, State of Guanajuato, and at points in the Valley of Mexico. There is no reason why this industry should not be indefinitely expanded, as the fruit has an assured and profitable market at all seasons of the year, both in Mexico and the United States.

The Indian fruit-growers of San Angel, near the capital, have within the last few years undertaken the culture of the raspberry, a fruit formerly unknown in Mexico.

Many of the owners of *huertas* (gardens), with all their unpretending exterior, have amassed considerable fortunes, but their methods are primitive and empirical, and the cultivation of the fruits of the temperate zone in Mexico needs to be attacked with all the resources of modern science.

As for semi-tropical and tropical fruits obviously Mexico has facilities which no portion of the continental domains of the United States can rival. Again, however, methods of culture have not yet proved equal to the opportunities. Oranges from various parts of the country are famous, and when imported into the United States are sold side by side with those from Florida and California. But they can be still further improved by more careful and intelligent methods of culture.

The orange is the leading member of the aurantiaceous family under the genus citrus. Three leading kinds are grown in Mexico—sweet, sour, and Chinese or mandarin—while another, called lima-orange, is a variety of the sweet orange. The country affords much better facilities for the cultivation of this fruit than does the southern portion of Europe, where irrigation is necessary. In Mexico, the rain, beginning in May or June, takes

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THE COUNTRY CLUB, MEXICO CITY.

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the place of irrigation. California and Florida stock have been imported and grafted or budded with Mexican trees. Tea for the Indians and the poor is made from the leaves, and a popular wine is made from the unused supply of the fruit itself. The distilled water of the blossoms, used for toilet purposes, could be obtained, and other by-products of the orange, by developing these industries.

The orange tree can be cultivated in Mexico at an altitude from 100 to 2,500 feet (30 to 762 meters) above sea level. The flower in the warmer climate usually appears in the latter part of October and the season lasts throughout the entire territory until May. The yield varies considerably, according to soil, climate, irrigation and cultivation. Every State in the Republic grows oranges, and the export quantity is increasing. The United States imports from that country have grown steadily from $43,000 in 1905 to $78,500 in 1909 (fiscal years), and has gradually passed the imports from Italy and the United Kingdom. Oranges famous not only in Mexico but even abroad come from Hermosillo in the State of Sonora, Montemorelos in the State of Nuevo Leon, La Barca and other districts in the State of Jalisco, and Yuatepec in the State of Oaxaca.

PINEAPPLE CULTIVATION NEAR CORDOBA, STATE OF VERACRUZ.

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Bananas grow spontaneously in great abundance near the Mexican coast. On lands close to the sea, plantations of banana trees are cultivated with encouraging success. The industry has not, however, been developed so systematically as in other countries adjacent to the Gulf of Mexico and the Caribbean Sea, although there is no good reason why Mexico, too, should not be exporting bananas abundantly. The State of Veracruz leads in banana production, followed by Michoacan, Chiapas, Jalisco, and San Luis Potosi, the others being credited with lesser amounts. Aguascalientes, Colima, Federal District, and Puebla produce practically no bananas. In 1909 over 212,000 bunches were imported into the United States from Mexico, a decided increase as compared with the number in the preceding year.

Pineapples also are cultivated to a great extent. This fruit is easily raised and needs but little care after planting. A crop of corn sown among the pineapples will meet the expense of cultivation, reducing the cost, therefore, to almost nothing. Veracruz and Chiapas furnish the largest supply, but all of the States at the south report pineapple crops, while toward the north the quantity produced becomes progressively less. Very few pineapples are exported.

For the production of the typical fruits of the tropics, apart from the banana and pineapple, such as the *guava, mamey,* the luscious custard-apple, the *manao,* the different and delicious varieties of *zapote,* the alligator pear (*aguacate*), etc., Mexico affords facilities equal to those of the West Indian Islands, and as the production in Mexico at present of marketable quantities of such fruits is inconsiderable, and is wholly unsystematized, there are obvious openings in this line of enterprise for fruit growers possessing some capital together with technical knowledge, sound business judgment and perseverance.

What has been said in regard to the cultivation of fruit in Mexico applies to vegetables also. The produce of the *chinampas,* or floating gardens of Lake Xochimilco, has been famous from times antedating the conquest, but the methods of cultivation have not greatly progressed since those early days. The business remains in the hands of the Indian market gardeners, who are routinaire in their ways. The quality and flavor of many vegetables leave something to be desired, and the defect can be overcome only by the application of modern methods of culture. Such vegetables as green peas, asparagus, celery, etc., could be produced in Mexico to rival in size, flavor and quality the finest products of the skilled market gardeners of the United States and Europe. Yet the consumption in Mexico of canned fruit and vegetables is considerable.

The attention, however, of nurserymen in Mexico has been drawn to the market available in the United States during the

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winter and early spring months for certain classes of vegetables, of which large quantities, grown along the northern line, are now shipped across the border. Americans themselves, realizing the profits to be made in this business, are taking it up, and the effects of competition and introduction of more modern methods cannot but be beneficial to the market gardening industry. Mexico still imports over 1,000,000 *pesos'* worth of vegetable and other food stuffs which might easily be produced within its own area, if the opportunities were properly utilized.

Besides the resources of the vegetable world available for the nourishment or pleasure of man, there are many species of the flora of Mexico enumerated as medicinal plants. In an official list prepared in 1893 by the Government, 233 distinct species of this character are given, and undoubtedly others have been added since that date. Among the most prominent are the jalap root (*ipomaca*), so called because it was discovered and has since been most largely produced in the neighborhood of the city of Jalapa, capital of the State of Veracruz; sarsaparilla (*smilax sarsaparilla*), which grows wild but is reported chiefly from the State of Oaxaca; damiana (*biglovia venenata*) and the castor oil bean, which thrives with particular luxury throughout the country. Many other drugs derived from native use are undoubtedly of value, but the plants supplying them need careful attention, and the uses to which they are put by the Indians must first be investigated and separated from the superstition surrounding them.

Timber.

Mexico is particularly rich in forest resources. The extensive forests of the hot country (*tierra caliente*) in the States along the coasts contain not only mahogany and a great variety of other cabinet woods, but also woods yielding precious gums, woods for dyeing purposes and other industrial uses.

Moreover, the extensive wooded tracts of the temperate country (*tierra templada*) contain a good quality of pine and other timber for carpentering and construction purposes.

What is urgently needed is a more scientific investigation of the forestry resources of the country. The methods of felling and hauling timber in the forests of the hot country are wasteful and destructive, while in the more temperate regions the deforestation of the land has proceeded at a rapid rate, owing to the demand for building, railway construction, mining and fuel purposes.

It is conservatively estimated that the area of first-class timber in Mexico comprises from 20,000,000 to 25,000,000 acres (8,000,000 to 10,000,000 hectares). The heaviest stumpage of pine and oak is found in the States of Chihuahua, Durango,

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MAHOGANY LOGS PREPARED FOR THE EUROPEAN MARKET.

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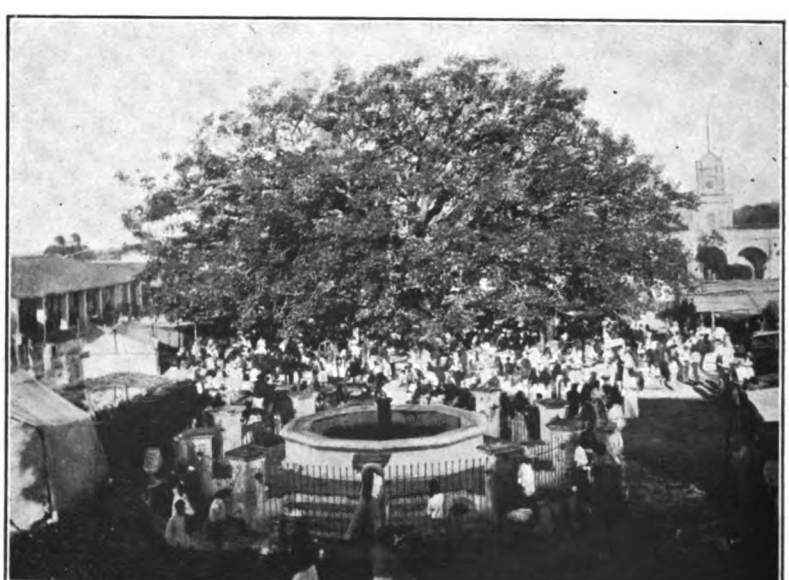
Jalisco, Michoacan and Guerrero, and the standing forests in these States compare favorably with similar timber in the United States and Canada, as regards quality, diameter, and extreme length of clear body. The best timber is still more or less remote from transportation, but railway extensions are constantly being carried out which will make accessible one of the great resources of the Republic.

The white and red oaks of Mexico comprise six species, including the *roble* oak, a very superior grade, which is claimed to have no peer as regards finish. Others show a fine quarter and grain, with thin sap, and will take a splendid finish.

Mexican pine comprises six species, as follows: white, sugar, and bastard white, white and red fir, and a small percentage of yellow pine.

There are also found in Mexico some 25 varieties of hard woods not known to the lumber markets of the world, some of which might be classed with other precious hard woods. Mexico's mahogany and (Spanish) cedar rating is already well established in foreign markets. The largest bodies of these fine timbers, or tropical hard woods, are to be found in the Gulf States, or, more definitely, on the Gulf of Mexico side of the Isthmus



THE FAMOUS "POCHOTO" OR COTTON TREE SHADING THE MARKET PLACE IN THE TOWN OF TONALA, STATE OF CHIAPAS.

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of Tehuantepec in the States of Veracruz, Tabasco and Campeche.

Among the chief of these valuable woods should be mentioned the *zapote mamey,* which resembles the walnut in appearance, is of a dark-brown cinnamon color, has about the same grain as mahogany, and is capable of a very high polish. The *zapote chico,* of the same family as the *zapote mamey,* is practically one of the most valuable woods growing in the tropics. The trees are of a great size, the length of their clear body being often 50 feet, and in sections of the tropics they are very plentiful. The sap, which is the chicle of commerce (q. v.), is gathered very much in the same manner as the rubber sap. The business connected with it has become quite prosperous in Mexico. The wood of this zapote tree is of a clear, deep reddish-brown color, very hard, but easily worked until thoroughly seasoned, when only the finest edged tools have any effect on its surface. The fiber is of such density that the wood sinks rapidly in water. The wood is susceptible of a beautiful finish, and is valuable for furniture. From various experiments of driven piling for both railway and port construction it has been found that the *chico zapote* bears the test of a much longer period of endurance than oak; the sea worms will not attack it; and for withstanding the effects of either salt or fresh water, mud, wet or arid soil, it appears comparatively indestructible.

Zapotillo colorado is another tree of the same family as the *zapotes.* It is often three feet in diameter and usually yields 50 feet of trunk without knots. The grain is very close, light in color, and takes a fine polish. *Zapotillo blanco* is a beautiful white wood with yellowish tinge of even color, and is very desirable for inside house finishing.

The *palo maria,* with a trunk from 50 to 100 feet long and clear of knots, closely resembles mahogany in color, grain and weight.

The red cedar (*juniperus virginiana*) is one of the best-known woods in Mexico; it is of even grain and color, and is extensively used for lead pencils and cigar boxes.

One of the most promising of the undeveloped woods is the *granadilla,* a kind of rosewood, in appearance equal to mahogany, of a rich, reddish-brown color and with dark wave line markings.

A beautiful and curiously marked wood is the *galeado.* The color is yellow with distinct irregular markings of seal-brown, close grain and very heavy.

Maccaya, much like hickory, is used by the Indians for wagon work. Other less known woods are the *coralillo, guapage, huisch, jicoco,* cork wood, of which there is a large amount in the tropics, and the *lignum vitæ.*

Although abundant information regarding timber resources

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in many different countries has been accumulated, it would seem, according to those intimate with the timber resources of Mexico, that the great wealth contained in its forests is not yet appreciated by the lumber world. The railroads are, however, now beginning to open up the country in some of the timber regions, and already narrow gauge and logging railways are either in process of construction or being projected. Lumber companies are erecting new and enlarged mills, and the lumber industry of the country, as yet in its infancy, is certain to have a tremendous growth with the advent of transportation facilities.

The Government has demonstrated its interest in forestry questions by appointing a Central Board of Forestry and Arboriculture in connection with the Agricultural Bureau of the Department of Promotion (*Fomento*). The personnel of this Central Board of Forestry consists of a Chairman, a Vice-Chairman, and five other members, the Chairman of the Board being also Director or Chief of the Forestry Service of the Republic.

The object of the Forestry Service is to take measures, in concert with the Federal Government, the governments of the States and other local authorities, for the conservation, proper exploitation and reforestation of forests. This service has been fully organized in the Federal District, which, for the purpose, has been divided into three sections, viz.: the Northern, the Southern, and the Southwestern, with a suitable corps of inspectors, foresters and keepers, for the supervision and care of existing forests and the reforestation of tracts that have been depleted of their timber.

Four nurseries have already been established in the Federal District—one in the southern section at Coyacan; one in the northern section at the village of San Juan de Aragon; and two in the southwestern section, one being situated in the Bosque de Santa Fe and the other in the Bosque del Desierto. A beginning has been made in setting out young trees in these nurseries. The number of young trees reared in these nurseries during 1909 was about six million, and in 1910 the output is close to fifteen million.

Work has also been undertaken in the formation of an artificial dune around the city of Veracruz by the planting of trees which, it is hoped, will give consistency to the soil and prevent the constant encroachments inland of sand from the beach, as well as improving the hygienic condition of the country's chief seaport. In connection with this work a nursery has been established at Veracruz which, besides furnishing trees for the artificial dune, serves as an experimental arboricultural station, with the special purpose of determining what trees are best adapted for cultivation and propagation in the hot country (*tierra caliente*).

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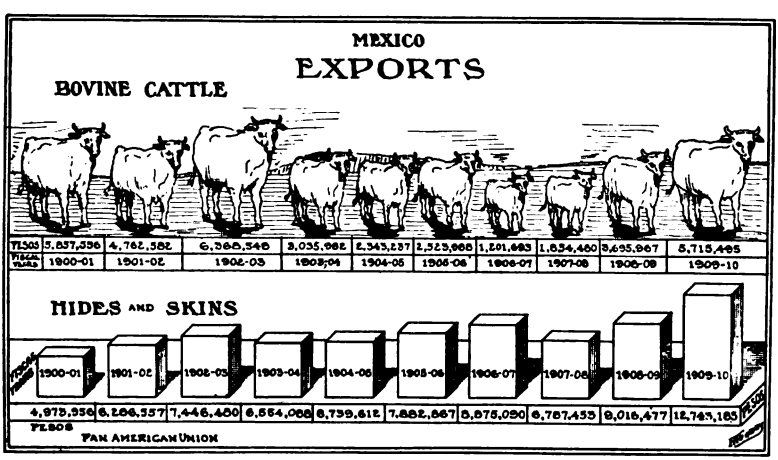
Trees are also being set out in the marshy ground around Veracruz with a view to its dessication and the improvement of the port's health condition. A special corps of employees, acting under the Central Board of Forestry, has charge of the work at Veracruz, and when it shall have been completed, similar work will be undertaken at other points on the coasts.

The Central Board of Forestry has appointed a commission to explore the forestry resources of the Republic, and it is also engaged in compiling statistics on the same subject. It is expected that additional impetus will be given this Central Board by further governmental legislation.

Stock Raising.

The raising of cattle has always been one of the most important industries of Mexico, and one of the least restricted by the Spaniards of the eighteenth century, who, by means of special legislation, gave encouragement to it to the extent of making it the favorite occupation of the inhabitants of the country. In earlier times cattle were of little value except for their hides, which formed an important item of export; later, however, they were turned to better advantage, the hides being manufactured into leather and the tallow used for the manufacture of soap. During the eighteenth century sheep raising also became an important industry in the northern and central provinces.

The States of the northern part of the Republic are so well adapted to such purposes that they may be said to be immense cattle ranges. The excellent situation of the lands, as well as their generally well-watered condition, will sometime make Mex-



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ico one of the world's great cattle producers, as every State in the Republic has more or less pasturage, and the relatively easy accessibility to the seaports offers good opportunity for foreign shipments if the home supply may be already satisfied.

Although the population of the United States has steadily increased during the past two decades, there has been a falling off in the proportionate number of cattle raised in the United States, so that cattle breeding for the market in the neighboring Republic of Mexico presents attractive prospects. Considerable interest has been manifested in this direction, and the exportations, although small, promise to increase in number and value in the future.

Mexican cattle were originally small in size, ranging between 900 and 1,200 pounds in weight. Even this latter is considered in the English market as only moderate, and the suggestion has been made by British traders that it would be wise for Mexican cattle raisers to import British bulls for the purpose of breeding larger cattle. The Department of Promotion (*Fomento*) has taken a deep interest in this subject, and many reforms have been introduced to the betterment of the stock.

Breeding and fattening of cattle is an industry which in Mexico may be regarded as almost entirely non-speculative. Breeders of beef cattle are, as a class, very well-to-do, and many of them are wealthy. Some of the largest fortunes of the country have been made from this industry. It is one that can be conducted successfully on a large or small scale in almost every part of Mexico.

At the time of the Cuban war (1895-1898), when the stock-raising business of Cuba was almost entirely ruined, so that for some time after peace had been restored cattle had to be imported into Cuba for local consumption, great impetus was given to the industry in Mexico, the results of which are permanently evident. The attention of ranch owners was thereby drawn to the possibilities in their own country, and the activity extended accordingly.

The important factor to be considered is, of course, the home demand, which has increased owing to the gradual spread of prosperity among the working classes, enabling them to include more meat in their diet. As a result of this there has been a steady rise in the price of beef cattle during the last decade. The fact that cattle raising is an industry which involves, at first, a certain amount of hardship, unless one possesses a large capital, has saved it from the evils of overcrowding.

In the foothills of both coasts, where pasturage is more luxuriant than in the northern districts, ranches can still be purchased, however, at a smaller rate than in the north, where the older and more extensive ranges have been located. A comparatively small capital, judiciously invested in the pasture lands on

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A Mexican Shepherd.

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the foothills of Tepic, Jalisco, Michoacan, Guerrero, Veracruz, Hidalgo, San Luis Potosi, or Tamaulipas, will maintain more cattle than a similar sum expended in pasture lands in Chihuahua, Durango, Coahuila, Zacatecas or Sonora, although the number of acres may be less.

On the Gulf slope of the eastern Cordilleras there is an immense region where the natural pasture of the foothills is probably as fine as any in the world. The rains of summer and the heavy dews in autumn and winter, even in the driest months (April and May) of spring, are sufficient to prevent any notable deterioration in the quality of the pasturage. Cattle of the plateau can be brought down for fattening and then resold at an encouraging profit. Moreover, what production is not immediately disposed of in local markets, may find export toward the north or across the Gulf of Mexico. The increasing steamship and railway facilities are of decided value in this consideration.

The ranches on the Pacific slope, through the Territory of Tepic, the States of Jalisco, Michoacan, Guerrero and (southern) Oaxaca, are quite different in character from those of the Gulf coast, because on the Pacific side the dry season is much more rigorous than on the Atlantic side. The aggregate amount of rainfall is little less, but it is not so evenly distributed, so that greater provision has to be made for water holes, tanks or other means of constant water supply. There is never a scarcity of pasturage, but unless pains are taken to insure an unfailing supply of water well distributed over the range, it may happen that the pasturage in the vicinity of water holes is all eaten up, as the more broken character of the country on the western slope makes it difficult for cattle to go great distances for water. Also, although western ranches are accessible to the home markets, they are much further away from foreign markets than are those on the eastern slope, and consequently pasture lands do not as yet command a very high figure.

Every State in the Republic is suitable for cattle, and ranches are to be found in all of them. The greatest producers are Jalisco, Chihuahua, Guanajuato, Michoacan, Veracruz, Durango, Zacatecas, and Yucatan, but Sonora on the west and Tamaulipas on the east, as well as Chiapas in the extreme south, are yearly advancing in the size of their flocks and herds. In 1902 the estimate of live stock in Mexico was given in the following figures:

Cattle	5,300,000
Horses	870,000
Mules	340,000
Asses	298,000
Sheep	3,450,000
Goats	4,240,000
Hogs	640,000

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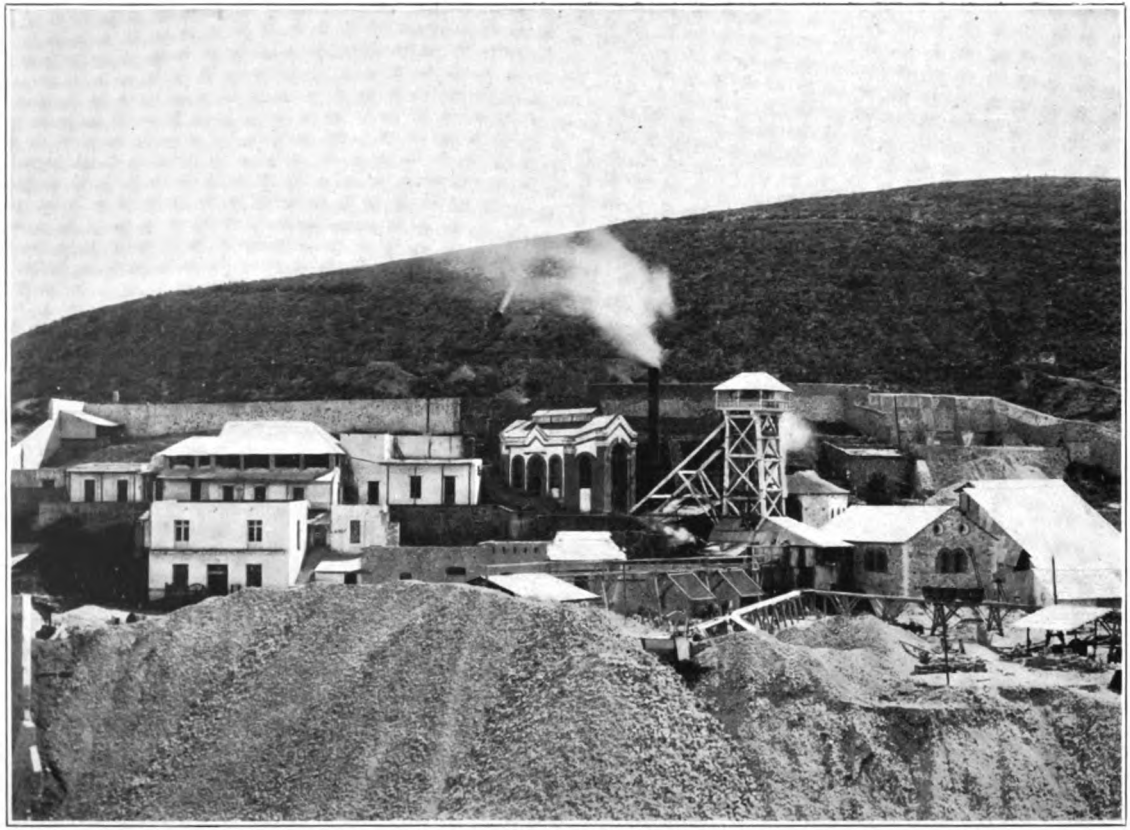

SAN RAFAEL MINING WORKS, PACHUCA DISTRICT, STATE OF HIDALGO.

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the value given being about $124,000,000. Actual statistics of national totals of live stock have not been collected for the year 1910, but encouraging progress has been noted in all branches of this branch of agriculture. The best breeds of cattle have been introduced, and the herds have increased in all parts of the country. Horses are of better grade than they were, and so abundant has the number become that the native stock now supplies the regular army, and steady improvement is marked in all classes. Mules and asses are raised in great numbers also.

Sheep and goat raising is a branch as well understood as and even more generallly pursued than cattle-breeding. There are probably not fewer than 5,000,000 sheep in the country, exclusive of several millions of goats. The principal sheep-raising States are Zacatecas, San Luis Potosi, Coahuila, Durango, Hidalgo, Mexico, Michoacan, Nuevo Leon, Puebla and Tamaulipas. It has been found from experience that sheep thrive best on the great central plateau, where they are practically free from disease and from predatory animals. Every year a fair number of Merino rams are imported and the stock is thereby well maintained. The native and unimproved breeds die out rapidly, and the amount of wool which they yield diminishes unless the standard is kept up. The wool produced is somewhat coarse, not equal to the best in the United States and elsewhere, and it could be improved, as farmers are endeavoring to do.

Hog raising is general throughout the Republic. Every Indian has his family of pigs, which to a large extent forage for themselves, although in many instances, where corn is abundant and transportation restricted, grain is fed to them. In the State of Tamaulipas, chiefly, but in many others, also, pig breeding has assumed commercial importance, and packing houses have been established.

Mining.*

Nature has richly endowed Mexico with resources well nigh countless, but in the bestowal of mineral wealth she has been most lavish. Beneath the surface of that volcanic ridge, raised between two great bodies of water, lie buried treasures incomparable, and although innumerable mining enterprises have for nearly four hundred years exploited the metal-bearing regions and have extracted fabulous quantities of precious metals, by far the greater part is yet to be laid bare.

At the beginning of the last century Humboldt estimated the mines in Mexico to number 3,000. In recent years hardly that many have been worked, but the extension of the railroads and the bringing into closer communication of remote sections of

*An abstract of the Mining Law is given in the Appendix, page 362.

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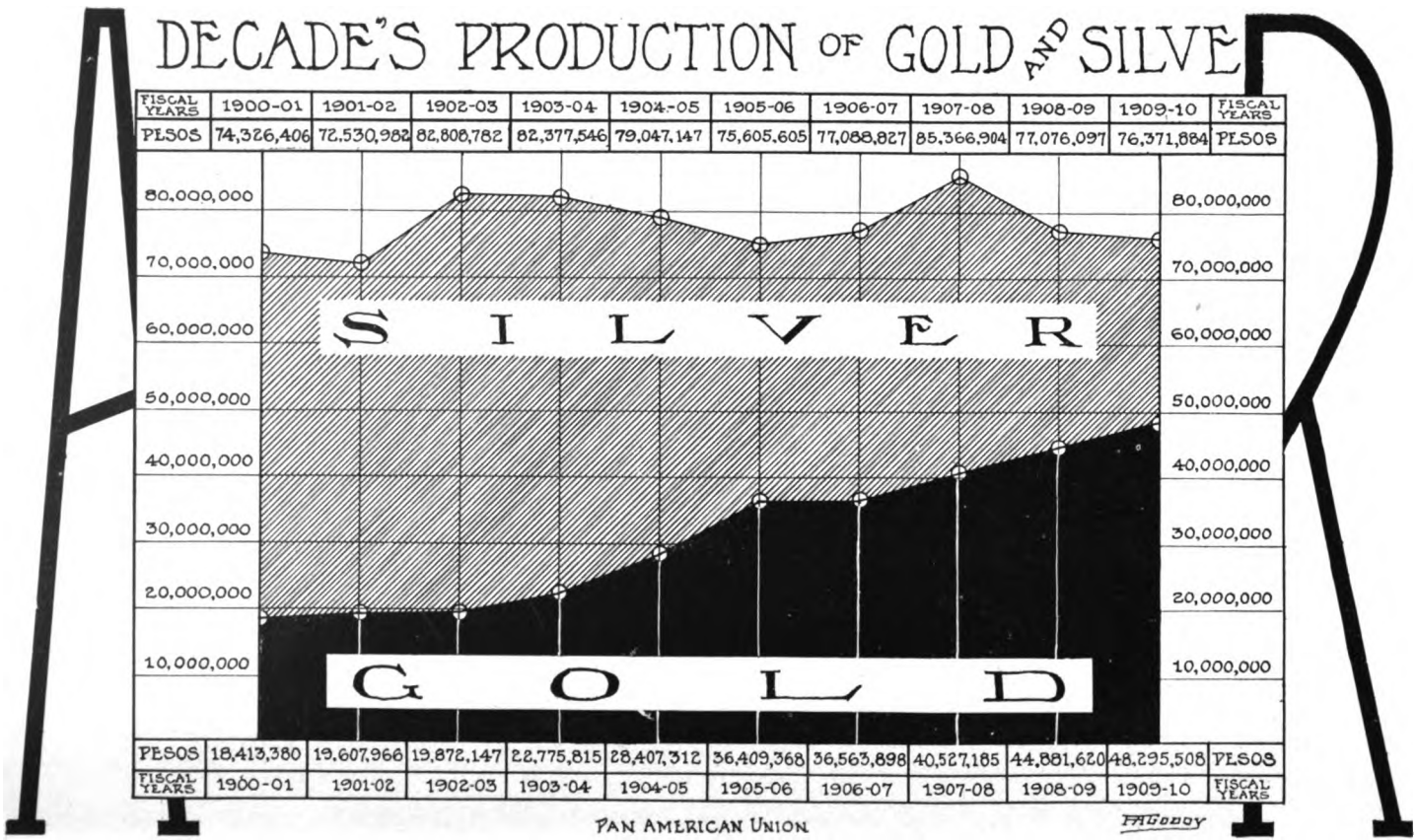

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the country have brought about a revival of the interest in this noted industry.

The great mining region runs from the northwest to the southeast, following the direction of the Sierra Madre cordillera, extending from Sonora to the south of Oaxaca, a distance of about 2,574 kilometers (1,599 miles). The immense parallelogram this region forms has a width of about 402 kilometers (250 miles).

The richest mines have been discovered on the western slope of the cordilleras at an elevation of about 915 to 2,440 meters (3,000 to 8,000 feet) above sea level. Most of the historical mines are situated here, having been opened by the Spaniards in 1526 and worked until 1700, with little formality and less science. The English first undertook mining operations in 1824. The wealth of "New Spain" became proverbial, but even with the activity of the centuries Mexico to-day offers one of the most inviting fields to the investor and to the scientifically equipped mining engineer.

Under each State will be given its principal mineral characteristics, but the relative importance of the metals may be described as follows:

Silver. Much of the silver ore found in Mexico is mixed in considerable proportion with gold, copper or lead, but wherever the silver is the metal for which the mine is chiefly worked, its output is reckoned with particular reference to the silver constituent. The principal silver camps of the Republic are in the States of Hidalgo, Guanajuato, Zacatecas, Chihuahua, Sinaloa, Guerrero and San Luis Potosi. Pachuca, Mexico, Puebla, Morelos, Querétaro, Oaxaca, Jalisco, Durango, and Sonora also are States in which silver mines are worked. The Territory of Lower California produces some silver, and as a matter of fact practically every region in the Republic shows some silver deposits, although they may not be commercially profitable.

The large silver production of the country comes principally from low-grade ore, running perhaps as high as 1,000 grams (32.15 troy oz.) in silver, but much that is treated contains only from 400 to 800 grams (12.86 to 25.7 troy oz.) per ton. Some of the mines in Mexico produce rich ore, 7 to 20 kg. (18.75 to 53.58 troy pounds) per ton, but that is the exception. The greater part of the gold production is obtained in connection with the silver output.

There are several kinds of silver ores taken from the mines. Some of the varieties are *plata blanca* (white silver), which is the rarest and best; *plata verde* (green silver), united with copper; *bronces* (bronzes, united with iron); *plomosos* (lead), a very soft ore, united with lead; *caliches* (chalk), united with a chalky substance greatly resembling the common white limestone, but which is rich in silver and easily worked. Previous to the tariff

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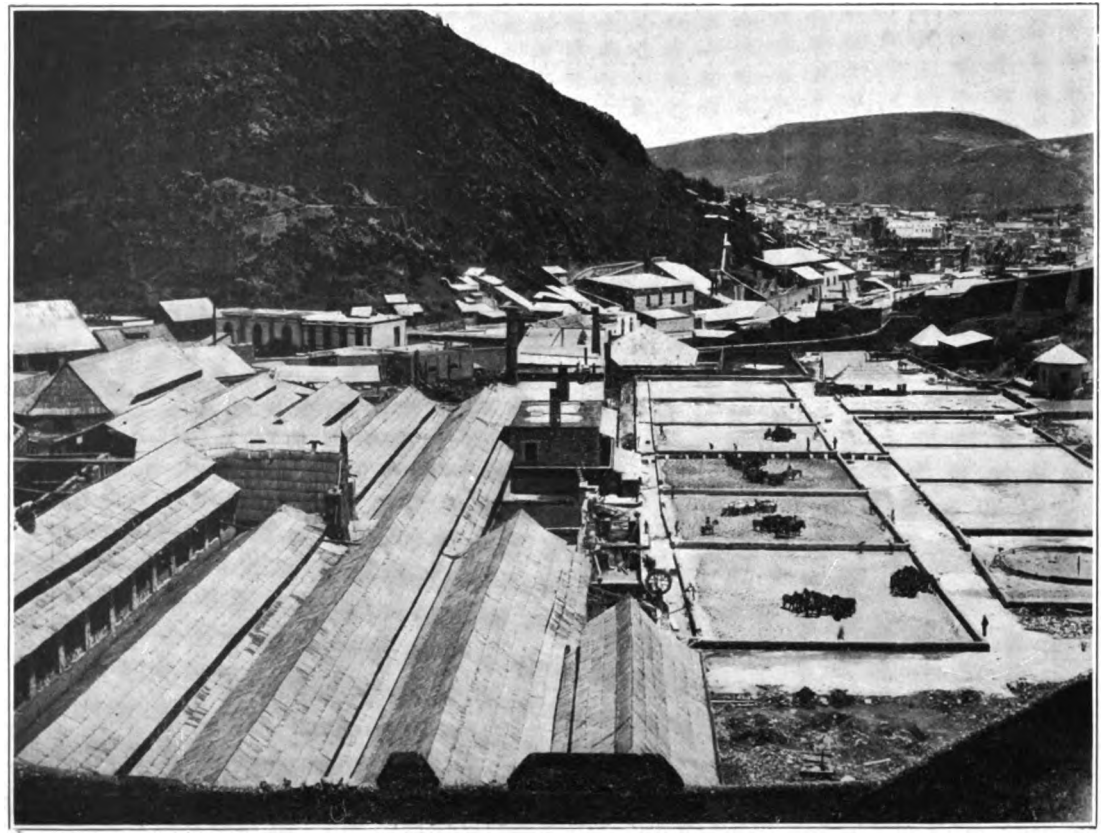

LORETO SMELTING PLANT IN 1903, PACHUCA DISTRICT, STATE OF HIDALGO.
(Notice improvements in adjoining cut.)

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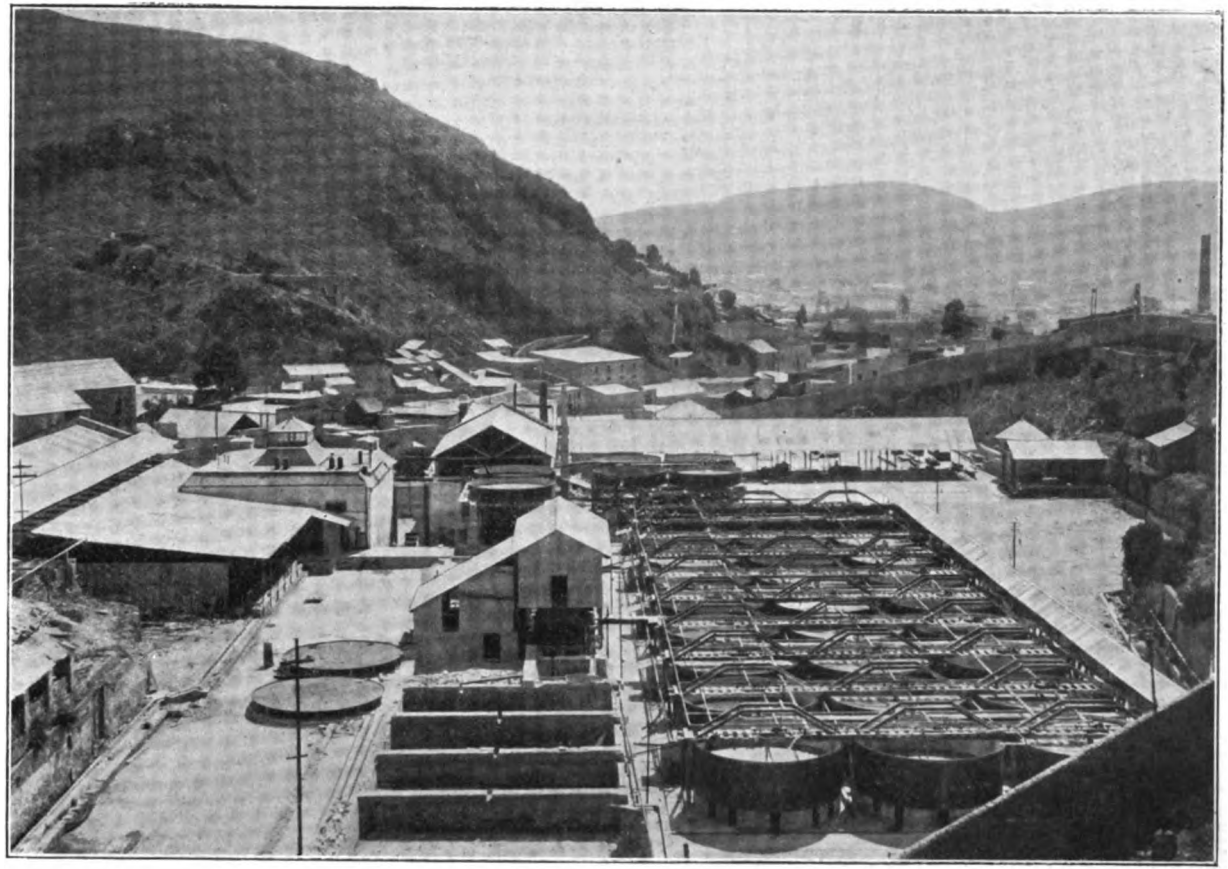

LORETO SMELTING PLANT IN 1910, PACHUCA DISTRICT, STATE OF HIDALGO.

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bill of 1890 silver-bearing lead ore was brought from Mexico into the United States for reduction, but the heavy duty put on such ores by this and later bills caused companies in the latter country to establish smelters in Mexico which have called for the investment of millions of dollars in the industry.

For the reduction of ore in Mexico two processes are most in vogue—the patio and the lixiviation processes.

The patio process, invented by Bartolomé de Medina in Pachuca, State of Hidalgo, consists of amalgamation with quicksilver. The system of treatment is to bring the ores from the mines in large pieces, when it is placed in a covered box and pounded to fragments by immense crushers. These small pieces fall upon a sieve, those which are too large to pass being sent back to the crushers, several of which are in a line working alternately. The ore then passes from the mortars (*morteros*) to the mills (*tahonas*), which consist of round vats placed on a level with the floor. Here the ore is ground into fine dust by means of heavy and hard granite stones, oblong in shape and connected with a revolving shaft operated by the best available power.

By the gradual addition of water during this process of pulverization a muddy mass is formed, which at the proper time is thrown into the *patio* (yard) having a hard cement or stone floor; on this the mud is treated by the addition of quicksilver and strong brine called *caldo*. It is thus left in the open air exposed to the heat of the sun—hence the term *patio* process—for some days, being stirred every day by men and animals tramping through it until the quicksilver and salt are well incorporated to the ore. This substance is called *torta de lama* (cake of mud); when mixed the mud is carried to the *lavadero* (washing place) and placed in vats to be washed, leaving in the vats what is called *plata piña,* silver amalgamated with mercury. This is placed in bags, the mercury extracted by heavy pressure, and the silver finally purified by heat. There are modifications of this method, adopted for reasons of expediency or because of improvements introduced by modern science.

The lixiviation process implies the crushing of the rock dry, and its passage through fine-meshed screens. It is then roasted in furnaces with salt, washed, and treated with a solution of hyposulphate of soda. The silver carried by this solution is precipitated by calcium sulphide, this precipitate is dried and roasted and the resultant metal finally melted into bars.

Notwithstanding the drop in the price of silver, the silver production of Mexico has increased of late years, but it must be admitted that this is largely due to the mining and treatment of gold-silver ores, and also to the fact that the older camps are those mainly producing, while the many mills in them are using modern machinery and treating large tonnages.

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THE "PATIO PROCESS" IN MINING, STATE OF HIDALGO.

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Gold. Mexico is destined to become one of the largest producers of gold in the world. That the country hitherto has not ranked high in the amount of this metal is due to the fact that heretofore the mining of gold has been merely an incident in the extraction of silver, and when the amount of gold was small it was ignored; but since the value of gold has appreciated to so great a degree the mining of the metal has assumed much larger proportions.

The gold deposits of the Republic may be conveniently divided into four classes: (1) alluvial deposits; (2) gold-bearing veins proper; (3) gold-silver veins; and (4) silver-gold-copper veins.

Gold placers occur in Alamo and Triunfo, Lower California, in the Altar and Hermosillo districts of Sonora, in the Fuerte district of Sinaloa, at El Oro and Indé, Durango, at Placeres del Oro and along the Rio del Oro, in the Bravos district, Guerrero, and in other parts of Mexico, although only few are of economic value.

Gold-bearing veins proper are found in the States of Sonora, Sinaloa, Chihuahua and Oaxaca, and in the Territory of Lower California. The last auriferous zone may be regarded as the southern continuation of the California gold belt, while the veins of Sonora appear to be of the same type as those of Arizona. The character of the principal gold-bearing veins of Lower California is granite, sometimes traversed by diorite dykes. The gold occurs free, or as auriferous pyrite, sometimes associated with copper sulphide, in quartz. Alamo is the best-known region. In Sonora there are rich gold-quartz veins, and other formations in which the metal is found. In Chihuahua are limestone deposits with gold, generally associated with manganese ore and carrying some silver, and one mine at least contains high-grade gold ore, together with silver, lead and zinc. Sinaloa has quartz lodes containing free gold, and some auriferous pyrite in quartz occurs in the same State, the country being eruptive. In Michoacan there is a low-grade auriferous deposit in cretaceous schist, near an eruptive. In Oaxaca gold is found in gneiss in a well-developed mine, average 13 dwts. (20 grams) gold per ton; there is also gold-bearing quartz with some silver, gold in magnetite, at the contact between gneiss and limestone, although near the limestone walls the ores are silver-lead-gold; native gold is found in flat veins of quartz impregnated with iron ores. In Zacatecas there is a group of gold-bearing veins carrying a few ounces of silver to the ton, and limestone with gold. In Jalisco and the Territory of Tepic are gold mines, those in the former showing quartz-veins carrying free gold associated with galena.

Gold-silver veins are found in Lower California, in Sonora, Sinaloa, Durango, Chihuahua, Michoacan, Guerrero, Mexico, Oaxaca, Guanajuato, Zacatecas, Querétaro and the Territory of

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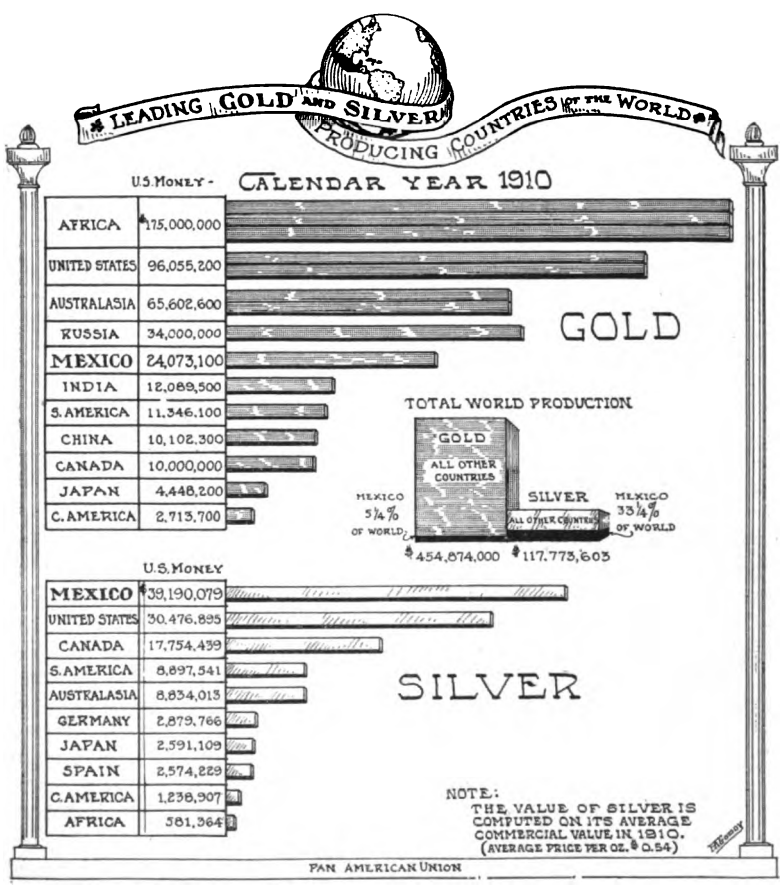
Tepic. There are reefs and veins of quartz, in some of which the gold is 50% to 60% of the value of the ore. In other mines hematite is present, or there are masses of altered pyrites with gold and silver in about equal proportions. In several mines the gold is the most important constituent, while in others the gold is of secondary or accidental origin.

Gold-copper mines are found in the Territory of Lower California and in the State of Sonora. Gold-silver-copper veins occur in Sinaloa, and similar deposits, with lead, are in Zacatecas. Copper-gold veins are found in Puebla, Veracruz, Chiapas, San Luis Potosi and Guerrero.

The production of gold in Mexico is steadily increasing, due partly to the discovery of new mines, but mainly to the further application of the cyanide process to the treatment of gold-silver



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ores and to the improvements in that process. The demand for the precious metal having stimulated the activity of the mining interests of the Republic, the production has advanced so much that Mexico now ranks fifth among the gold-producing countries of the world.

Copper. The Territory of Lower California is the largest producer of copper in the Republic. Copper-bearing veins occur also in the islands of San José and Carmen, in the Gulf of California off the coast of that peninsula. The large ore-bodies in Sonora are in crushed porphyry. The whole region about Cananea is a copper deposit. In the Alamos district copper occurs with silver-lead ores, while elsewhere in the State copper is found associated with high-grade silver values. In Sinaloa copper deposits are being opened up, although there are old mines in existence, one averaging 4 per cent copper, with gold and silver values. In Durango copper occurs with silver-lead sulphides. In Chihuahua there is a group of mines containing chalcopyrite and copper carbonates, but deposits occur in other parts of the State. Coahuila has large copper resources where the metal occurs, impregnating porphyritic breccia at the contact with limestone. Many deposits are not worked at present owing to the low proportion of copper contained in them. In Tamaulipas copper occurs in a zone of diorite-porphyry and limestone; the ore is chalcopyrite associated with pyrite as inclusions in silicates, or as veinlets and coatings in cavities, but being low grade they are idle. In Zacatecas mines are worked for lead, silver and gold, as is also the case in Aguascalientes. Sometimes the copper ores are confined to the upper levels, giving place to galena, blende, etc., below. In San Luis Potosi copper ore occurs associated with zinc and silver. In Michoacan there are irregular deposits of chalcopyrite, with some bornite chalcocite and tetrahedrite, in granite. The low-grade ores are not worked, as yet. In Mexico (State) are deposits of native copper; in Hidalgo copper with silver. Puebla, Guerrero, Oaxaca, Veracruz, Tlaxcala, Colima, and Chiapas give warrantable evidence of copper deposits. With the immense output of copper which has characterized the Republic during recent years, Mexico is now second only to the United States in the world's production of that metal.

Lead. Lead in the form of galena (sulphide) is a common constituent of the silver-bearing veins of Mexico, which is often so high that the ore may then be regarded as an ore of silver. Large deposits of galena and lead carbonates also occur, usually with low silver values. As a rule, galena, when coarse grained, is low in silver, and when fine grained, high in silver, but both varieties may occur in the same deposit. The chief producing camps are in Durango, Chihuahua and Coahuila. Silver-lead

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ores with copper are found in Sonora, and in San Luis Potosi cerussite and galena (secondary) occur in limestone or on the contact between limestone and andesite. In Guanajuato galena is found high in silver. In Zacatecas numerous lead mines are worked, and in one at least when the ore is smelted it averages 35% lead. There is also argentiferous lead with gold and copper ores. In Nuevo Leon important silver-lead and silver-lead-zinc mines have been located. Hidalgo, Guerrero, Tamaulipas, Jalisco, Querétaro, Puebla, Colima, Morelos, Tlaxcala, Oaxaca, Aguascalientes and the State of Mexico, all have well-defined lead deposits, many of them profitably worked. The main output of lead in the Republic comes from the central plateau country, where the great camps of Sierra Mojada, Almaloya, Niaca and Santa Eulalia are situated. The lead production from the numerous mines in the northeastern States is large, the ore going principally to the smelters in Monterrey. Many lead ores, as has been said, carry silver and are available for that reason. The lead, as bullion, is mostly shipped to the United States for refining. Mexico ranks third in the production of lead, being exceeded in the quantity produced by the United States and Spain.

Iron. The only deposits of iron-ore mined on a large scale are those of the northern part of Coahuila, which supply the Monterrey (Nuevo Leon) foundries, but in the western part of that State there are iron deposits. Besides the one mentioned, foundries are active in the State of Hidalgo, and one on the border of the States of Jalisco and Guanajuato. Near Todos Santos, Territory of Lower California, large iron-ore deposits are known, and in Sonora workable beds of hematite of the Upper Triassic age have been located. Iron in one form or another exists in Michoacan, Oaxaca, and in various parts of the Isthmus of Tehuantepec; in Querétaro, Jalisco, Puebla, Guerrero, Hidalgo, Mexico, Veracruz, and Colima. Hence, iron-ores are widely distributed in the Republic, and some of the deposits are of large dimensions. The famous iron mountain near the city of Durango, in the State of the same name, was discovered in 1552 by Vasquez del Mercado, from whom it receives the name *Cerro de Mercado.* This hill (*cerro*) is 5,000 feet (1,524 meters) long, from 300 to 400 feet (91 to 122 meters) in height, and of variable width, the average being about 1,100 feet (336 meters). According to good authority the mineralized portion of the Cerro de Mercado is in the form of a very powerful rhyolite dyke. The ore is hematite in granular compact masses of enormous dimensions, marked by contraction-planes. Large octahedral crystals of martite and well-formed crystals of apatite are often present on the faces of separation of the different fragments. Both the specular and micaceous varieties of hematite occur in little veins, either in the compact ore, or more frequently enclosed in the

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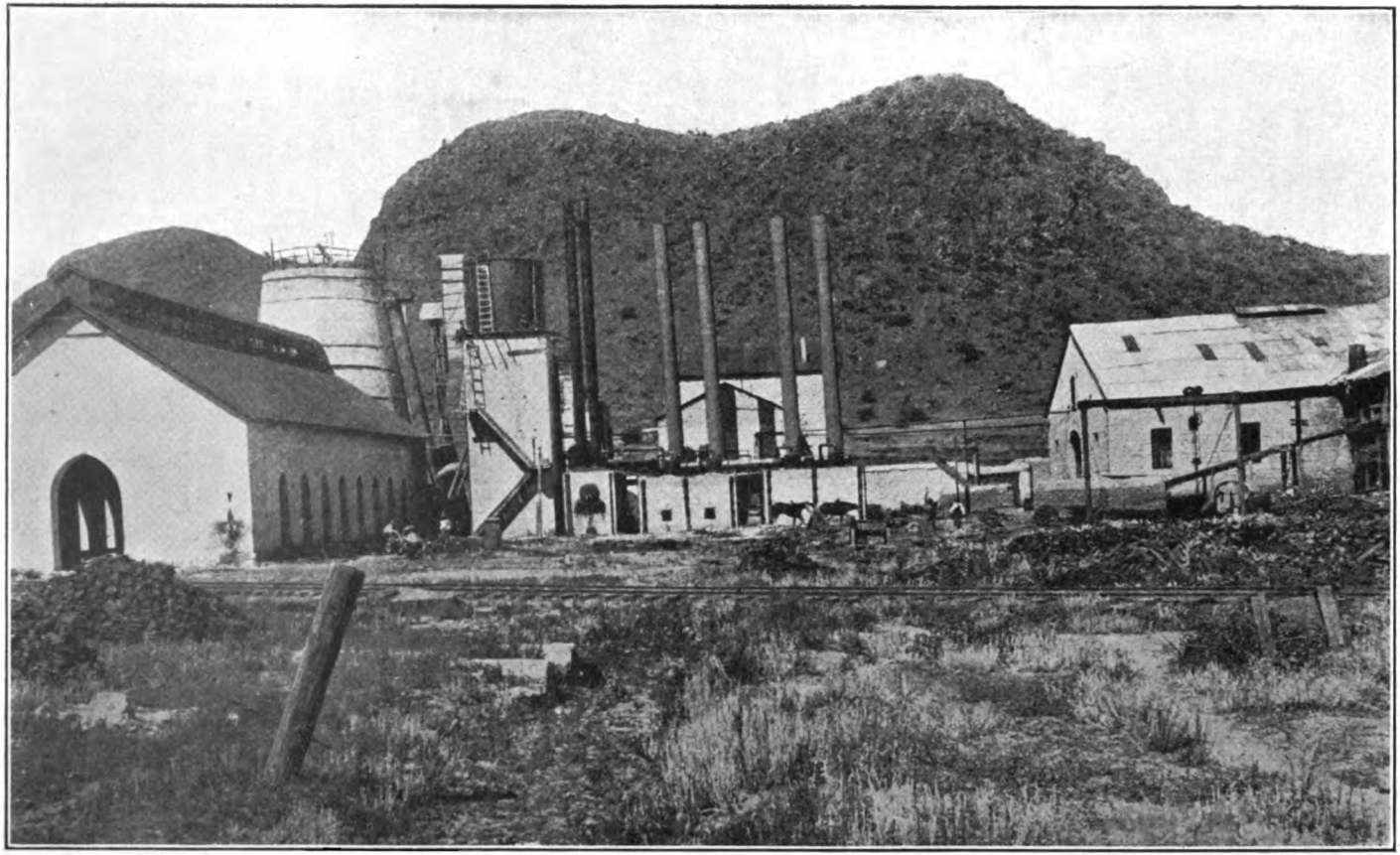

"Cerro del Mercado," The Iron Mountain Near the City of Durango.

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rhyolite. Red ochre is found here and there in veins up to one meter (3.28 feet) thick. The ore is associated with chalcedony—forming a network of little veins crossing the hematite in all directions and concentrated in large isolated masses or cementing fragments of hematite—and apatite (as "asparagus stone"), nearly always crystallized alone or with iron oxide, and also forming little veins and masses. The mountain is by no means all iron ore as was at one time supposed, but is said to range from 60% to 70% pure ore. At the base are immense beds of compact rhyolite; farther up the sides of the mountain the deposit consists of fragments of the same eruptive; still higher are fragments of rhyolite and hematite mixed together; but at and near the top the whole deposit is covered entirely by fragments of iron-ore. This ore has a specific gravity of 4.658, and the estimated weight of the mass is 600,000,000 tons, worth about 5,000 millions of dollars. Lower California and Sweden possess similar deposits. The product is to some extent utilized by a smelter in the vicinity. Although there is abundant iron in the Republic, Mexico does not rank high in the production totals of the world.

Zinc. The States of Chihuahua and Sinaloa supply the greater portion of Mexico's output of zinc, this metal ranking sixth in the list of exports of metals from the Republic. The Mexican ore carries a desirable percentage of calamines, wanted in the great American mines as a necessary adjunct to the smelting processes there. Chihuahua is actually the chief center of the industry; in the better developed districts the ores are carbonates, with some zinc silicates, and others are characteristically sulphide. About all of the ore mined in Mexico has been shipped abroad, either to the United States or to Europe, but there is great probability that smelting plants will be erected near to the mines, so that the metal itself may be produced within the country. There were in 1909 only 95 zinc mining properties, basing the estimate upon taxes paid.

Quicksilver. Although Mexico holds the fifth position in the production of quicksilver in the world, it fails in producing enough to supply the home market. Prior to the introduction of the cyanide process for the treatment of silver ores the importation of quicksilver, known in Spanish as *azogue,* was heavy, and the necessity for having this metal for the patio process was so great that the Government, both Federal and State, removed all taxes on quicksilver mining and provided for the free admission of that metal into the country. This exemption is in force to-day, and is one of the causes stimulating the new developments in the quicksilver districts of Mexico. The falling off of production in other parts of the world has turned attention to the Mexican districts, and the prospect of activity in quicksilver mining in the Republic is very good. Quicksilver or mer-

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cury has a fairly wide distribution in Mexico, but exploitation deposits appear to be few in number. The chief occurrences are in the States of San Luis Potosi, Guerrero, Querétaro and Jalisco. Cinnabar (mercury sulphide) occurs in Sonora, and the deposit has been worked. In Durango, quicksilver, enclosed in rhyolite, older than the neighboring basalt, is found. Guanajuato has cinnabar, and in San Luis Potosi is the first mine in the Republic to extract 2,000 quintals (quintal=4 *arrobas,* or 46.02 kilograms, or 101.44 pounds avoirdupois) of mercury and gain the premium of 25,000 *pesos* offered by the Government in 1843. This State has also the richest mine in the Republic (the *Guadalupana*), the formation of which consists of highly folded calcareous slates or marls. The ore is cinnabar impregnated with marls, or associated with calcite and finely crystallized gypsum. The average of the output is at 10% quicksilver, but with some loss in treatment. In Michoacan there are old workings, evidently of a low-grade ore, samples yielding only moderate quantities of the metal. Near Cuernavaca, State of Mexico, are deposits of cinnabar, as veins or irregular masses. The State of Jalisco shows quicksilver, sometimes in strings of pockets. This résumé by no means exhausts the report of the existence of mercury, and undoubtedly more careful study of the resources of the country in this regard, now that the metal is becoming so much in demand. In 1909 the quicksilver of Mexico came principally from the deposits in the States of Guerrero and San Luis Potosi. Here the ore contains about 2.1 per cent of mercury, but on the average it is less. "In general, both the mining and reduction of quicksilver ores in Mexico have been conducted on a small scale, and owing to wasteful metallurgical processes only high-grade ore has been available, but inasmuch as ores containing very low quantities of mercury are profitably treated in Europe and California, the Mexican deposits formerly neglected are now becoming attractive. During the Spanish régime the production of quicksilver was directly encouraged, and for a time controlled by the Government in the interests of the silver miners who used it in the patio process. Then the supply decreased owing to disturbed political conditions, and Mexico afforded a good market for California quicksilver. Now, however, the reduced demand arising from the substitution of cyanidation for the patio process and the resumption of operations in several of the quicksilver localities of the country has changed trade conditions, and Mexico is likely henceforth to be a considerable producer of the metal, and even an exporter rather than an importer."

Tin. Deposits of tin have been found in many parts of Mexico, in the States of Durango, San Luis Potosi, Guanajuato,

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Jalisco, Sonora, Querétaro, Aguascalientes and Coahuila. These have not as yet proved of much economical value, however.

Antimony. After China and France (and Algeria), Mexico has good rank as a producer of antimony. Deposits are known to exist in the States of Sonora, Zacatecas, Mexico, Oaxaca, Hidalgo, Querétaro and San Luis Potosi. Most of the product comes from the latter States, a large smelter being in operation in San Luis Potosi.

Manganese. This metal is found in the Territory of Lower California, in the States of Puebla, Guerrero, Hidalgo, Mexico, Zacatecas, and Durango. One deposit in the State of Mexico, easily mined, carries about 44% of manganese, but owing to transportation difficulties Mexican manganese mines are but little worked, as there is no local consumption and the product has to be shipped to the United States or Europe.

Graphite is now one of the minerals well exploited in Mexico. Up to a few years ago every American pencil manufacturer had to import graphite from Bohemia or Bavaria. A large deposit of amorphous graphite has been discovered and worked in Sonora, which proves of excellent quality for pencil making and other purposes, so that the American pencil trade, and even some European, is now supplied from this source. Mexico ranks seventh in the production of graphite.

Rare metals are quite general in Mexico. *Vanadium,* especially as vanadinite, was discovered in the early part of the last century in lead-bearing veins in Hidalgo. It occurs also in San Luis Potosi, Chihuahua, Zacatecas and Guerrero. *Bismuth* of a high grade comes from Sonora, Sinaloa, Chihuahua, Querétaro, Guanajuato, Zacatecas and Durango. *Selenium* is reported in various places. No doubt can exist concerning the wealth of Mexico even in such metals as nickel, cobalt, molybdenum and others, but careful study will be needed to develop their possibilities.

Petroleum and Asphalt. The ancient builders of Mexico used bitumen and asphalt as a cement in the construction of their temples and burned petroleum before their sacred altars. For ages a natural oil spring, measuring many feet in circumference and without a clear outlet of any kind, has been known to exist near the Rio Soto la Marina, but its flow was wasted by continual evaporation as the oil seeped to the surface. The deposits of asphalt and liquid petroleum abound in many parts of the Republic, but they have not, until recently, been worked to any great extent. The entire Atlantic coast of the country shows traces of oil and asphaltum, which there goes by the name of *chapapote.* In the northern part of this region, between the foothills and the sea, there are springs (*chapapoteros*) and deposits

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of these substances. Systematic exploration of these Mexican oil fields has extended over a short period, beginning in the first years of the century, and practical operations have been confined chiefly to the territory above specified. It must be mentioned, however, that mineral oils have been found in many other localities, principally in the States of Oaxaca and Michoacan.

All along the Gulf coastal plain, as far south as Campeche, there are indications of oil, derived from rocks of various ages. In the neighborhood of Tampico and of Coatzacoalcos (Puerto Mexico), however, development has been most extended. Lying 67 miles (107 kilometers) from Tampico, southward, and 10 miles (16 kilometers) from the Gulf, is the famous Dos Bocas well, pronounced by experts one of the greatest in the history of the oil industry. Oil was struck at a depth of 1,800 feet (549 meters) on July 4, 1908, but it immediately caught fire and burned for 57 days, during which time it has been estimated that 10,000,000 barrels of oil were consumed. Many thousands of acres of petroliferous lands in this very promising region have been secured by active oil development companies, and pipe lines to Tampico and Tuxpam on the Gulf have been constructed. The development of the oil fields in this section has an important effect on the entire Republic. The volume of business at the port of Tampico is greatly increased, and the entire neighborhood is permanently advanced by the activities caused thereby. The products of the oil fields furnish fuel, in part, at least, for the railway systems of the country, and as a cheap fuel for manufacturing, heating, lighting and domestic purposes. In the State of Veracruz, about 55 miles (88 kilometers) south of Tuxpam, oil fields of trustworthy nature have been opened, and the area of activity here is increasing. Further south, on the Isthmus of Tehuantepec, in the basin of the San Juan, Coatzacoalcos and Tancochapa Rivers, numerous indications have been met, the condition of this field resembling those of Beaumont, in Texas, more especially in regard to the presence of gypsum and rock salt below the oil-bearing limestone. Actual development of a very practical character has taken place on the Isthmus itself, in the basin of the Coachapa River, a tributary of the Coatzacoalcos River. Oil from here is pumped through a pipe line to a refinery in Minatitlan, 20 miles (32 kilometers) above Puerto Mexico (Coatzacoalcos), to which point a branch railway connects with the the Tehuantepec National Railway, so that both terminal ports, Salina Cruz and Puerto Mexico, where tank steamers can be directly supplied, are accessible. In the State of Tabasco indications of oil are very plain, and this field resembles in some respects that of southern Louisiana. In the State of Chiapas, too, oil is known to exist.

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Generally speaking, Mexican petroleum is very heavy in the northern portion of the fields, ranging in gravity from 10° to 14° Baumé at Ebano, and gradually, though irregularly, becoming lighter and consequently more valuable southwards. Thus the oil of the San Cristobal field (Isthmus of Tehuantepec) varies from 26° to 30° Baumé, while in the field at Frontera (Tabasco) it varies from 32° to 43° Baumé. The heavy oils of Ebano give about one per cent of gasoline and ten per cent of illuminating oil, but by the cracking process this yield can be increased. In the Minatitlan region the oil yields naturally 11 per cent of gasoline and 25 to 27 per cent of illuminating oil of excellent quality, and a considerable quantity of gas oil and lubricating oil. The oil from the Frontera region of Tabasco resembles the Pennsylvania oil in character and the products which result from refining. The amount of sulphur in Mexican oil is high, ranging from 4 per cent to 5 per cent in the Ebano region, and approximately 3 per cent in the San Cristobal field.

The production of petroleum in Mexico, although not yet accurately measured, owing to the lack of complete statistics, may be estimated at approximately 3,000,000 barrels in 1909 (over 90,000,000 gallons), which is refined within the country. This does not meet the demand in the Republic, as 27,554,581 gallons of crude oil were imported at the same time, and, although it has been demonstrated that Mexico is capable of developing a large supply of oil, ultimately, perhaps, sufficient for home demands, it is safe to say that at present all the oil in sight will not as yet meet that need. Already native oil has been successfully used on locomotives of the contiguous railways, on steamers plying on both the oceans, and in many industrial power plants. Recently, too, a shipment of 30,000 barrels of asphalt was made from Puerto Mexico (Coatzacoalcos) to Canada.

Coal. Mexican geologists affirmed for many years that no mineral coal existed in the country. About the year 1881, however, reports from several parts of the Republic claimed that anthracite coal had been discovered, and specimens of what was supposed to be this mineral were sent to the National College of Engineers to be assayed. Much enthusiasm was aroused by these reports, and the Department of Promotion (*Fomento*) appointed scientific commissions to visit the alleged coal localities and report thereon. The labors of these commissions proved that coal did exist, assaying from 41 to 92 per cent, the latter in the State of Sonora. It was to this coal that General Rosecrans gave the name of black gold. The Commissions discovered and reported on anthracite deposits in Sonora, Michoacan, Veracruz, Guerrero, Oaxaca, Puebla, and other States.

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The interest thus created led to the formation of many companies, and investors looked forward to the amassing of fortunes from collieries, but the results were disappointing. The enthusiasm was succeeded by a state of depression and inactivity on the discovery that the seams of coal brought to light were poor and that the early rumors had been exaggerated. Want of means of communication between the deposits and the markets also had much to do with this depression, which continued until profitable deposits were unearthed in Coahuila. Generally speaking, these were in the cretaceous formation and are divided into upper and lower beds. The product of these fields has been used to supply coke for the use of smelters in several parts of the country, and some coal has been shipped to the United States through the port of Ciudad Porfirio Diaz (Piedras Negras). Throughout this region the coal measures are considerably disturbed by faults and foldings, and the seams are irregular in width, having many barren areas between them.

Along the Gulf of California, extending north to the Arizona line, and in the State of Sonora, coal was found and used by local silver smelters as early as 1870. In 1890 an English company secured a concession of 4,000,000 acres of land in this belt, but it was forfeited, and a Mexican company was organized to carry on the work. Up to 1890 some 59 coal mines had been opened in the State of Puebla, but poor facilities for transportation, difficulties encountered in mining, and the rather poor quality of the coal conspired to prevent great activity, although the Government of the State was desirous of fostering the industry. Coal fields have been discovered in the State of Nuevo Leon, but no continuous work has resulted from them. As long ago as 1875, 200 tons of coal (lignite) were shipped to New York from the Cristo mine at Tempoal (Tamaulipas), but nothing resulted from the experiment.

It may be added that coal occurs also in the States of Durango, Zacatecas, Hidalgo, Guerrero, San Luis Potosi, Querétaro, Colima, Tlaxcala, Jalisco, Morelos, Michoacan, Tabasco and Veracruz, but the beds are of little or no importance. The only coal deposits commercially exploited in Mexico at the present time are in the State of Coahuila.

There are three developed coal basins in this State, all traversed by the Mexican International Railroad, an integral part of the National Railways of Mexico. These are (1) Fuente basin, (2) Sabinas basin, and (3) Las Esperanzas basin, situated, respectively, 7, 117 and 145 kilometers (4.3, 72.7, and 90 miles) south of the Rio Grande, forming the Texas border between Eagle Pass and Ciudad Porfirio Diaz.

The Fuente basin has an area of 5,000 hectares (12,350 acres)

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and is parallel to a similar deposit worked at Eagle Pass and Laredo. Analyses show the following proportions:

	Fuente.	*Laredo.*	*Eagle Pass.*
Moisture	1.40	3.20	3.49
Volatile matter	39.40	37.35	36.87
Carbon	40.20	39.90	34.00
Ash	19.00	25.55	25.64

Owing to the great amount of volatile matter, this Fuente coal is especially valuable for roasting and gas manufacture, and has sufficient carbon for steam generation.

The Sabinas basin has an area of 137,500 hectares (about 400,000 acres), directed northwest to southeast. It is much broken up by faults, and workable areas rarely exceeding 500 hectares (1,235 acres) in a single body, and being separated by great distances of thin or impure coal. Under the most favorable circumstances the coal is no more than 1.52 meters (5 feet) thick, and is divided into two seams by a layer of shale from 15 to 30 centimeters (6 to 12 inches) wide. The lower seam is usually clean, but the upper is often mixed with ribbons of carbonaceous slate. Development began in 1884, when a shaft was sunk not far from the Sabinas River.

The Esperanzas basin has a coal the quality of which is similar to, but the thickness double, that of the Sabinas basin, while the faults are not so extensive nor the dislocation so great. The area is 137,500 hectares (35 kilometers long by 5 kilometers wide, about 400,000 acres), the principal workings being in the southern part. In the eastern part the coal is thicker but not so regular or so pure. Excepting that from West Virginia, this is more than equal to American coal in heat units, and yields nut, pea and buckwheat coal; it furnishes good fuel for Mexican steam users.

The bituminous coal field in Coahuila is that in which nearly all the operating coal is mined. The coal produced here is of the coking grade, and coke made on the spot finds a ready market in the Republic.

Mexico consumes about 4,500,000 tons of coal and about 2,000,000 tons of coke annually. As the total output of the country is less than 1,000,000 tons each year, consumers are dependent on the United States and Europe for the remainder of their fuel supply. It is claimed, however, that at the present rate of development of the coal industry in Mexico it will be only a few years more until it will be unnecessary to import coal at all.

Peat in considerable quantities has been discovered and utilized with both commercial and scientific success, especially for the production of gas. A very large deposit is located near the City of Mexico.

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The total mineral output of Mexico in the fiscal year 1909-10 was 158,965,832.86 *pesos;* an increase of 9,017,832.86 *pesos* over the previous year.

The following tables show the production of the leading mineral substances:

1909-1910.	Mexican Currency.
Gold	48,428,841.71
Silver	76,405,754.15
Copper	26,172,214.00
Lead	6,808,465.00
Zinc	1,150,558.00
Iron (estimate)	1,200,000.00
Coal (estimate)	4,400,000.00
Mineral Oil (estimate)	2,800,000.00

The quantity of gold produced in Mexico in the fiscal year 1909-1910 was 36,222 kilograms or 1,188,537 oz. troy and of silver 2,257,363 kilograms or 72,574,220 oz. troy.

The following table shows in Mexican currency the value of the production of gold and silver in Mexico since 1877-1878:

	Gold.	Silver.	Gold and Silver.
1877-78	1,473,912.32	24,836,903.02	26,310,815.34
1878-79	1,739,764.98	25,135,264.00	26,875,028.98
1879-80	1,859,506.02	27,555,626.99	29,415,133.01
1880-81	1,999,152.34	29,234,398.00	31,233,550.34
1881-82	1,848,186.05	29,239,077.98	31,087,264.03
1882-83	1,886,513.95	29,568,576.99	31,455,090.94
1883-84	2,083,025.46	31,695,841.00	33,778,866.46
1884-85	1,804,668.82	33,226,211.02	35,030,879.84
1885-86	1,298,988.75	34,208,214.02	35,507,202.77
1886-87	1,348,603.30	37,534,103.99	38,882,707.29
1887-88	1,311,514.05	39,367,982.98	40,679,497.03
1888-89	1,351,223.29	41,347,626.00	42,698,849.29
1889-90	1,383,655.21	39,156,687.00	40,540,342.21
1890-91	1,817,546.12	41,874,411.01	43,691,957.13
1891-92	2,121,426.70	47,096,156.01	49,217,582.71
1892-93	2,506,907.07	55,245,434.00	57,752,341.07
1893-94	2,456,989.86	58,210,149.98	60,667,139.84
1894-95	9,366,139.25	58,204,085.00	67,570,224.25
1895-96	12,012,395.30	61,003,672.02	73,016,067.32
1896-97	13,544,460.81	63,689,112.00	77,233,572.81
1897-98	14,971,835.90	70,149,605.95	85,121,441.85
1898-99	18,450,885.87	72,498,722.98	90,949,608.85
1899-00	15,444,666.72	70,218,914.02	85,663,580.74
1900-01	18,413,380.63	74,326,406.01	92,739,786.64
1901-02	19,607,966.98	72,530,982.98	92,138,949.96
1902-03	19,872,147.65	82,808,782.99	102,680,930.64
1903-04	22,775,815.06	82,377,546.01	105,153,361.07
1904-05	28,407,312.98	79,047,147.98	107,454,460.96
1905-06	36,409,368.06	75,605,605.27	112,014,973.33
1906-07	36,563,898.24	77,088,827.00	113,652,725.24
1907-08	40,527,185.27	85,366,904.06	125,894,089.33
1908-09	44,881,620.92	77,076,097.16	121,957,718.08
1909-10	48,295,508.38	76,371,884.15	124,667,392.53
	429,836,172.31	1,802,896,959.57	2,232,733,131.88

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The number of mining properties on which taxes were being paid at the close of the fiscal year 1909-1910, the substance mined, and the number of claims of one hectare each embraced in said properties, are shown in the following statement:

Substances Mined.	No. of Properties.	No. of Claims in Hectares.
Gold	1,871	24,548.45
Gold and silver	9,425	107,292.35
Silver	5,968	55,109.86
Gold, silver and copper	3,213	82,928.86
Gold, silver and lead	1,874	28,254.94
Gold and copper	363	5,074.34
Silver and copper	1,207	20,291.37
Silver, copper and lead	425	7,266.99
Silver and lead	4,251	51,805.57
Silver and manganese	4	61.00
Silver and mercury	7	71.58
Antimony	112	2,039.66
Sulphur	78	2,065.81
Bismuth	1	24.00
Copper	1,285	30,484.07
Copper and iron	212	5,345.10
Copper and lead	28	533.29
Tin	57	610.00
Garnet and tourmaline	1	2.00
Hyacinth	1	12.00
Iron	391	13,340.14
Manganese	20	266.00
Mercury	117	3,275.21
Opal	18	70.75
Lead	123	1,910.71
Rock salt	6	113.00
Tellurium	1	12.00
Tourmaline	1	7.00
Turquoise	4	19.00
Zinc	91	1,046.28
Total	31,155	443,881.33

These mining properties were distributed among the various States of the Republic as follows:

Central States.	No. of Properties.	No. of Claims in Hectares.
Aguascalientes	258	1,671.46
Durango	4,071	41,131.67
Guanajuato	1,225	17,121.42
Hidalgo	1,091	11,367.85
Mexico	845	12,241.95
Morelos	54	747.76
Puebla	276	7,794.98
Querétaro	119	1,425.71
San Luis Potosi	570	10,131.43
Tlaxcala	1	4.00
Zacatecas	2,129	19,264.48
Total	10,639	122,902.71

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Northern States:		
Coahuila	699	10,406.11
Chihuahua	5,163	78,823.90
Nuevo Leon	816	13,445.52
Sonora	5,254	119,135.49
Total	11,932	221,811.02
Gulf States:		
Tamaulipas	160	1,928.03
Veracruz	85	2,345.46
Total	245	4,273.49
Pacific States:		
Lower California (Territory)	833	8,168.92
Colima	29	863.61
Chiapas	34	746.27
Guerrero	1,008	17,397.00
Jalisco	1,930	17,306.19
Michoacan	502	11,167.42
Oaxaca	1,899	18,185.77
Sinaloa	1,655	16,696.62
Tepic (Territory)	449	4,362.31
Total	8,339	94,894.11
Résumé:		
Central States	10,639	122,902.71
Northern States	11,932	221,811.02
Gulf States	245	4,273.49
Pacific States	8,339	94,894.11
Grand Total	31,155	443,881.33

Industries.

Mexico is not essentially a manufacturing country. Such articles as the mass of the people require are, however, generally produced in sufficient quantities to meet the demand. Since the change in the value of silver, the lesson is being learned that it is cheaper to make than to buy, and within the last decade very large amounts of capital have been invested in manufactories and other industries. Nevertheless Mexico will not become, for years at least, a manufacturer of articles other than those the raw materials of which are produced locally; but this will furnish a field for the investment of almost limitless capital, for hardly any nation on earth offers raw material in such splendid abundance. Factories are springing up as these raw materials are increasingly supplied, but the country's resources are so great that it is destined to continue to become, still more than at present, a great exporter of raw materials. The products of the

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soil are so varied, so certain and so sure of good markets, that capital has hitherto been diverted to agricultural and mineral development rather than into manufacturing enterprises on a large scale. This is now no longer the case, and the manufacturing interests of the Republic are assuming considerable importance.

The Indian, who forms the largest proportion of the laboring population, is conservative. He is loth to lay aside the rude implements of his forefathers and take up methods of modern invention and advancement. His needs are few, and he has not always been inspired with a desire to improve his condition. Having inherited nothing but tradition and the meager physical means to provide for his sustenance, he zealously guarded the one and utilized the other to the same extent as his forebears, leaving his children only what he himself received. Three centuries of Spanish domination have left their imprint upon his character, and everything he does is executed in a simple manner. Ambition was dormant. He was satisfied with his lot and cared little what the morrow might bring forth.

But conditions are changing rapidly. In some instances the Indian is losing ground, the white races are surpassing him, but where the native acquires the energy of the life of a new environment, he shows with surprising adaptability a spirit of industry and progress. Let us remember the small factories of a generation ago, or recall perhaps the inadequate street car facilities of that time; let us today take opportunity of seeing the magnificent establishments equipped with modern machinery, and of traveling on the ubiquitous trolley, propelled by electricity drawn from a power station 100 miles away; then we must realize that the Indian peon, who furnishes the skilled labor for their complicated operation, has in him an industrial capacity which will, before the middle of the century, regenerate his race.

The impetus to this ambition comes from many sides. Transportation facilities are increasing; a progressive government fosters industrial interests; the future development of the Republic is assured; foreign capital and men of enterprise are settling in the country, and the old isolation of nation and race is a thing of the past.

Time was when Mexico was regarded by natives and foreigners as a land of mineral wealth only, and her many other natural resources were but little noticed or developed. The building of great railway systems, affording better means of communication, has, however, brought to the notice of the world at large the undeniable possibilities for wealth-earning afforded by the country.

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Mexico, which seemed to know nothing but mines, began a few years ago, aided too by the unfavorable money exchange that acted almost as a protective tariff, to manufacture, and today the whistle of the mill and the sound of the hammer are heard throughout the land. Many articles which once brought the government millions in duties are not now imported, the people having gone into the manufacture of them. Thus a compensating revenue to the government is produced through other channels, while at the same time the wealth of the nation is augmented. Only a general survey of the manufacturing industry of Mexico is here attempted.

Cotton Mills. The principal factories of the Republic are engaged in making cotton cloth, but the bulk of the Mexican mills are fitted for merely the coarser grades of cotton goods and have their best customers in the peon. Cotton manufacturing is not, however, a new industry in the Republic. Cortes found in 1519 such excellent cotton fabrics among the Aztecs that he sent some as a present to the King of Spain. Even before the Aztecs cotton spinning was known and practiced, and it seems probable that here, as in Asia, cotton cloth was worn before it was in Europe.

The manufacture of cotton by machinery in Mexico dates back about seventy-five years. Among the earliest mills still in operation are those of Cocolapam (Veracruz), founded in 1840. The industry increased but slowly until 1894 when there was a boom and many mills were started, but they confined themselves to coarse goods; since 1899 a few of the larger and better managed mills have manufactured goods of medium high grade, and these have, as a rule, made money. Nevertheless, the importation into Mexico of the higher grades of cotton goods is steadily increasing, as the demand from the wealthier classes improves.

The most important mill towns of Mexico are Puebla and Atlixco (State of Puebla), Orizaba (State of Veracruz) and the City of Mexico. The distribution of active mills is given in the accompanying table. Others, closed down at the date of the official report, are included in the general summary.

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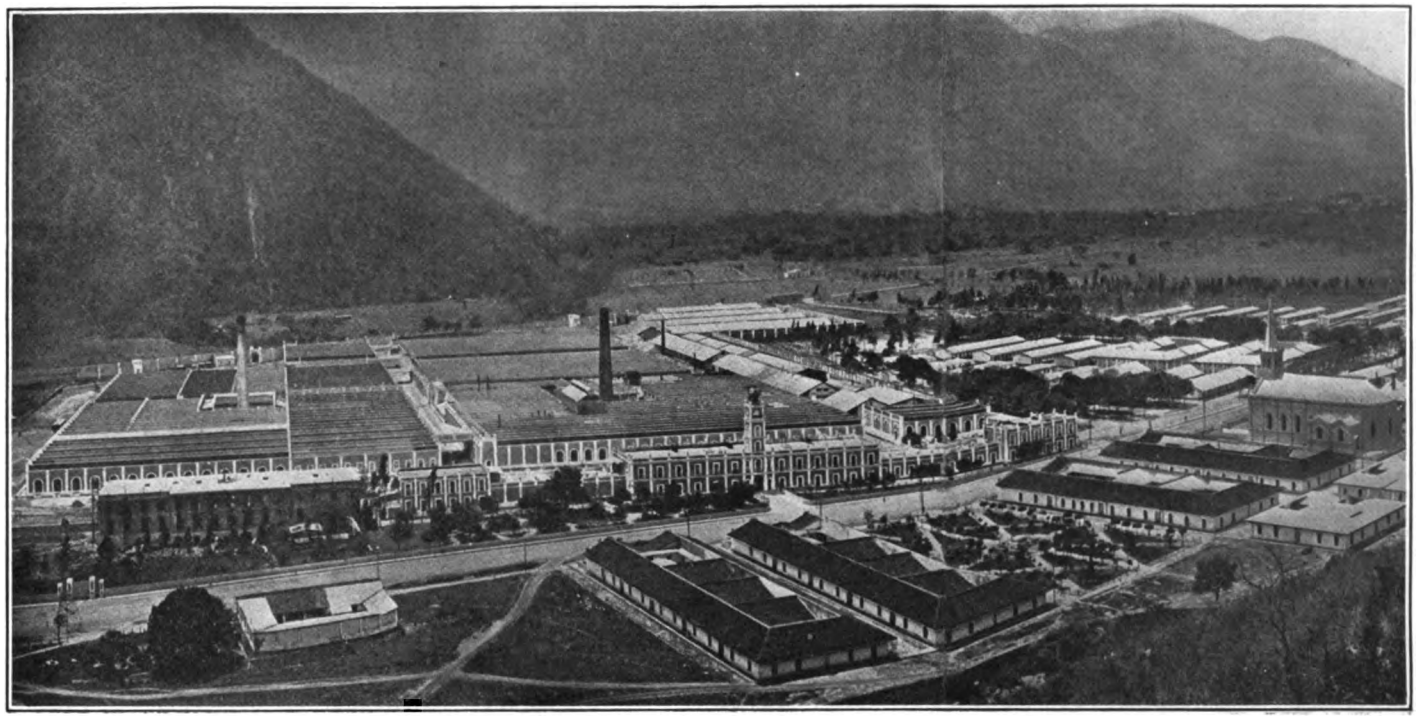

TEXTILE FACTORY, "RIO BLANCO," NEAR ORIZABA, STATE OF VERACRUZ,
Capitalized at 18,000,000 *pesos*.

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TABLE OF COTTON MILLS IN ACTIVE OPERATION IN MEXICO, JANUARY 1, 1909.

According to official figures furnished by the Mexican Government there were in Mexico January 1, 1909, 139 mills, containing 726,278 spindles and 25,327 looms. Of these, 18 reported as closed down, either temporarily or permanently. The 121 active mills, containing 666,536 spindles and 23,701 looms in operation, are distributed as follows:

State.	Mills.	Spindles.	Looms.	State.	Mills.	Spindles.	Looms.
Puebla	35	181,304	6,726	Durango	7	9,854	332
Veracruz	12	123,777	5,693	Chihuahua	3	7,388	295
Federal District	11	69,740	1,872	Guerrero	2	7,388	236
Jalisco	5	51,618	1,373	Tepic	1	6,472	166
Mexico	7	45,772	1,468	Sinaloa	2	6,264	235
Tlaxcala	8	33,988	1,412	Sonora	1	5,726	170
Guanajuato	5	26,620	759	Chiapas	1	2,788	91
Queretaro	4	20,410	689	Hidalgo	1	2,000	.....
Coahuila	5	19,888	754	Colima	2	1,620	24
Nueva Leon	4	17,848	701				
Michoacan	3	14,740	326	Total	121	666,536	23,701
Oaxaca	2	11,331	379				

CONDITION OF THE COTTON MANUFACTURING INDUSTRY, ACCORDING TO GOVERNMENT RETURNS—FISCAL YEAR ENDING JUNE 30TH.

	1900.	1901.	1902.	1903.
Cotton mills.....number	144	153	155	139
Active spindles.....do..	588,474	612,939	595,728	632,601
Active looms.....do..	18,069	19,036	18,222	20,271
Printing machines..do..	36	33	37	35
Operatives .....do..	27,767	28,617	25,668	26,348
Cotton consumed, pounds	63,768,000	66,716,000	60,910,000	60,653,000
Pieces cloth produced, each 27 meters long..	11,552,952	11,581,523	10,428,532	11,587,105
Yarn sold.....pounds	4,154,000	4,050,000	4,143,000	4,732,000
Mill sales (gold).....	$18,558,000	$16,871,000	$14,332,000	$18,380,000

	1904.	1905.	1906.	1907.	1908.
Cotton mills.....number	144	146	150	142	145
Active spindles.....do..	635,940	678,058	688,217	693,842	732,876
Active looms.....do..	20,364	22,021	22,776	23,507	24,997
Printing machines..do..	38	38	39	41	42
Operatives .....do..	27,456	30,162	31,673	33,132	35,816
Cotton consumed, pounds	63,582,000	68,850,000	78,982,000	80,808,000	79,454,394
Pieces cloth produced, each 27 meters long..	12,406,523	13,731,638	15,456,187	18,928,832	16,280,843
Yarn sold.....pounds	3,724,000	3,393,000	4,769,000	4,669,000	5,336,512
Mill sales (gold).....	$21,170,000	$25,505,000	$25,483,000	$25,740,000	$27,357,113

It is seen that the consumption of cotton per spindle in both 1900 and 1908 was 108.4 pounds.

The machinery used in most Mexican cotton mills is practically all English, and some of them are well equipped for making

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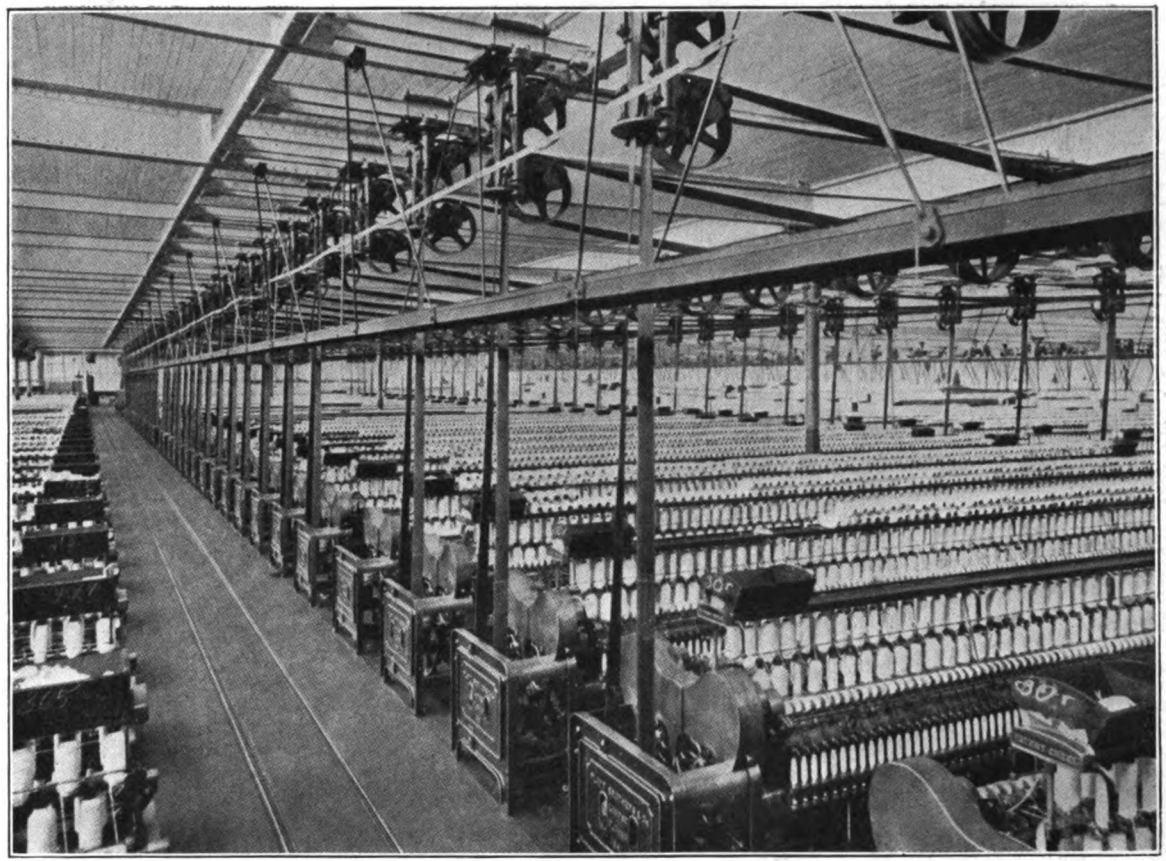

INTERIOR OF A COTTON MILL, ATLIXCO, STATE OF PUEBLA.

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white goods and printed muslins. Besides cloth and prints—the *manta* of the people—*rebosos* (shawls and scarfs for women), blankets and coarse napkins are made. Knitted garments are also manufactured, but only in small amounts, as this industry is in its infancy.

Woolen Mills. The manufacture of woolen articles has since 1541 been going on in Mexico, as it is an established fact that in that year the first viceroy introduced Merino sheep into the country and encouraged the production of cloth from their fleece. Woolen blankets are made by machinery, and also those of a mixture of wool and cotton, which, although they have not the body and fineness of texture of those of Europe, have good resistance and are cheap. The making of *sarapes* constitutes, perhaps, the most profitable industry. These multicolored woolen cloaks or blankets are well woven, those of Saltillo (State of Coahuila) and Oaxaca (State of Oaxaca), made by the Indians in that neighborhood, have been celebrated for their fine texture, brilliant colors and excellent wearing qualities. They have achieved considerable fame abroad, and the best grades command a very high price. The Indians use primitive looms, in their homes, but they have developed a remarkable skill in this native art.

The manufacture of woolen articles is carried on in many States, and there are mills in Aguascalientes, Durango, Guanajuato, Hidalgo and Puebla; the principal factory in the Republic is at Tlalnepantla (State of Mexico), with 4,700 spindles, 117 looms, hydro-electric power and about 800 operatives. The output consists of suitings, kerseymeres, carpets and blankets. Other factories of this character are actively producing goods of similar grade, and meeting to a moderate extent the increasing demand for woolen materials.

Silk and other textile industries. Silk weaving can not be said to be greatly developed at present, but it has every prospect of growing. Silk was cultivated and sold in the markets of Mexico as far back as the time of Charles V, Cortes speaking of the fact in his letters to that monarch, and there are still preserved pictures done by the ancient Mexicans upon a paper made of silk. The culture of the silkworm and weaving of its product were prohibited by the Spanish crown in its American possessions during the viceregal administrations; the industry gradually died out, therefore, and it has only recently been revived.

The climate of Mexico is unexcelled by any in the world for raising and developing cocoons, as the white and black mulberry leaves grow well in most parts of the country. In 1886 several of the State governments offered inducements for the cultivation of trees and worms, and the same offers have been repeated

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since then. The National Government also is taking measures to foment sericulture throughout the Republic, and instructions have lately been issued to the Department of Promotion (*Fomento*) to provide adequate instruction to all persons desirous of engaging in this industry. Mulberry trees will be distributed from the government agricultural school grounds in the Federal District, and premiums are rewarded for cocoons. In the gardens between Churubusco and Coyoacan (suburbs of the City of Mexico) 6,000,000 trees are to be planted and from them propagation slips can be distributed throughout the country. Exhibits will be held of the industry, and instruction in care of silkworms and in weaving of silk from cocoons is to be given. This interest on the part of the Government has already borne fruit, for silk culture in Chihuahua has commenced under favorable circumstances, and in Nuevo Leon attention has been strongly attracted to it.

In Orizaba is a jute mill equipped with the latest machinery and operated by electric power from falls on the Rio Blanco. The output of this industry consists of various kinds of sacks, as well as all classes of packing cloth, carpets, rugs and twine; it is the intention to make also light goods of Hessian burlaps.

There is a linen mill in Mexico City, which was established in 1887. It produces ticking, drill, hollands, performing the spinning, weaving, dyeing and bleaching on its own premises, Other mills in the Republic have been erected, and textiles of domestic weave are common in every region.

Paper Mills. There are in Mexico many varieties and a great quantity of fibrous plants and other material for paper making, and certain grades of parchment, prepared by the Aztecs long before the Conquest, have been in constant use in the country. In fact, the old codices that have preserved the records of the pre-Columbian epoch would have been lost had it not been for the wonderful strength of these documents. Nevertheless paper and paper stock is imported to meet the growing demand of the printing and allied industries. The oldest mill was located at Cocolapam, near Orizaba (State of Veracruz), producing a straw and printing paper of a low grade. In Arteaga (State of Coahuila) is a paper mill, and in the State of Tlaxcala there are several mills devoted to the manufacture of paper, in addition to the cotton mills. The most activity in this industry is shown, however, in the State of Mexico, not far from the capital. This region is densely wooded and is well supplied with water power; nearly all the newspapers of Mexico are printed on papers manufactured here. A plant is also in operation for the preparation of mechanical wood-pulp.

Sugar Mills. The production of sugar in Mexico is carried on both by the wealthy planter, with his hundreds of thousands

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of dollars invested in lands and refineries, and by the poor renter with his few acres of ground, his wooden rolls and copper kettle. The rich man produces refined white sugar, and the poor man produces the various classes of brown sugar known as *piloncillo, panocha* and *panela.* Up to a few years ago the sugar industry was backward, the older and cruder methods being used, and the best kind of machinery being but slowly introduced. The first sugar plantation and mill in Mexico was established by Cortes at a place called Tlantenango, in the State of Morelos, and this State even today leads in the production of that necessity of life. Upon some few estates, however, the most complete and modern machinery has been introduced. This is especially the case in the factories in the States of Morelos, Michoacan and Jalisco, and in this regard the amount of foreign capital invested is constantly increasing.

There are over 2,000 sugar mills, large and small, in Mexico, and the tendency is both to increase the acreage under cultivation and to modernize methods and machinery in the manufacturing processes.

Breweries and Distilleries. The making of fermented liquor is one of the prehistoric industries of the country, and the *pulque* of the natives was known before the time of Cortes. Although by far the larger amount drunk is still prepared in the traditional methods, modified perhaps by the economic ideas of the owners of the large haciendas, yet a small proportion is today manufactured under carefully controlled conditions, so that it bids fair to become a drink which will not be offensive to the foreign palate.

Since the increase of the foreign population beer has reached a high place in popular demand, and nearly every city has its brewery, while every wayside *cantina* has good beer with which to quench the thirst of the traveler. Excellent beer is brewed in the large centers like Orizaba, Toluca, Monterrey and Mexico City, and as an industry brewing ranks among the best established in the Republic. The machinery is of the best grade and modern, and the most advanced precautions are taken to comply with all the requirements of hygiene. Strong efforts are made, too, to encourage the use of beer among the peon class, so that some of the evil consequences of the indulgence in stronger drinks may be overcome.

Distilleries are found all over the country, but not many of the plants are modern. Their chief output is the liquor *mescal,* which is a raw product of the *maguey;* a more carefully prepared liquor, the same as *mescal* but more comparable to standarized drinks, is *tequila,* so called from the town of that name in the State of Jalisco.

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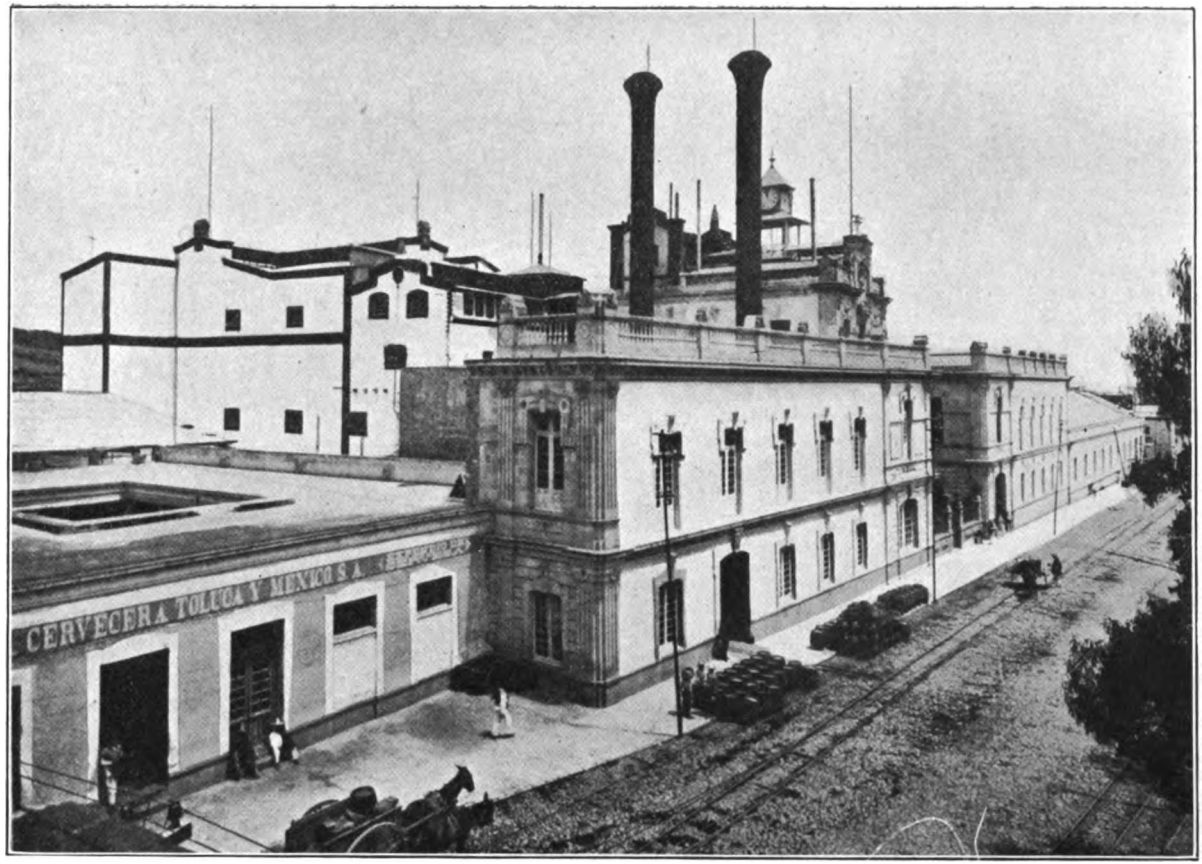

"Toluca y Mexico" Brewery, Toluca, State of Mexico.

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Very fair native wine and brandy are made of the grape, that grown near the town of Parras in the State of Coahuila being especially good, but commercial success has not been so extensive as to attract national attention to the industry. It is undoubted, however, that grape culture is attaining importance. The white and purple grape of the Parras* (Coahuila) region are equal to Malaga or Granada varieties, and its good wine should be better known.

Tobacco Products. The tobacco-utilizing industry is extensive, nearly every town and hamlet having its cigarette factory, and owing to the general use of cigarettes in Mexico cigarette factories are of greater importance than the cigar factories, and the Republic has some of the best equipped cigarette factories in the world. The largest institutions for the production of both articles are in the Federal District, Puebla and Veracruz. At the end of 1909 there were registered in the Republic 437 factories; these had turned out 505,437,551 packages of cigarettes (a package contains usually 16 cigarettes), and 61,336,415 cigars of various kinds, besides other forms of tobacco for consumption or further manufacture. These factories are for the most part well equipped with the latest and best European and American machinery, are conducted in a thoroughly hygienic way in buildings especially constructed for the purpose, and the skill of the working people, who moreover really enjoy their occupation, is an object lesson of the industrial possibilities of the native Mexican.

Iron and Steel Works and Foundries. Iron foundries are numerous, the excellent quality of the Mexican minerals and their abundance making it possible for them to turn out good work. In most of them the product is no more than the smaller agricultural implements and ordinary marketable iron, but in an increasing number finished articles of the highest grade and character are regularly produced. There is a large foundry in Monterrey which is capable of turning out practically everything required in the way of rails, beams, and other forms of structural iron. Other foundries are located in the States of Hidalgo, Jalisco and Guanajuato, and the great iron deposits of the country are promising neighborhoods for this industry.

Tanneries and Leather Industries. Small tanneries exist in most of the cities and towns, although the tanning and leather trade of the Republic is centered chiefly in the City of Mexico and Leon (State of Guanajuato). From an economic point of view tanning in Mexico should be profitable, owing to the low cost of the prime materials, but from an industrial standpoint it

*Parras means grapevine, or wild grapes.

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is behind the times, and the majority of tanneries in the Republic are comparatively small affairs. The tans in general use are *cascalote, guamachil* bark, oak bark, *palo blanco, timbre* bark, and sumac leaves.

The States surrounding the Federal District produce these vegetable tans which are mostly used throughout the country, with the exception of palo blanco from Lower California and Sonora; *caraigro,* from the northern regions of Mexico, but which is not used by Mexican tanners. *Cascalote* is the national tanning material. Toluca (capital of the State of Mexico) is the most important point of distribution of this valuable product, although a considerable quantity comes from the State of Guerrero.

The popular method of tanning consists in placing the prepared hides for two days in vats with a "weak" or "sweet" tan liquor until the hides have uniformly taken the color. They are then removed and sewed up into bags, roughly resembling the original shape of the animal, and are filled with a stronger tan liquor and a quantity of ground *cascalote.* The filled hides are allowed to stand in rows on the pavement of the patio, the liquor oozing out and running into a centrally located pit, from which it is dipped, to be thrown over the hides and to refill them, from time to time, the liquor being gradually strengthened. They remain, as a rule, sewn up for about 15 days, and are for a part of this time piled up in six or eight tiers, the pressure of the filled hides upon each other causing the tan liquor gradually to ooze through, and it must be acknowledged that the result is a very satisfactory tannage. Sole leather is the principal product, but uppers and harness leathers are also manufactured.

Shoes are made in the Republic, in considerable quantities, although the large and increasing importations indicate that local factories can not supply the demand for an article of highest grade, nor can they keep up with the tendency of the native to use footwear as part of his clothing. Every town has a shoe factory, but of only modest proportions, sufficient to meet the ordinary requirements of the people. Nevertheless the industry is growing; there are probably not many more than one dozen factories of modern type in the country, most of them in or near the City of Mexico. The largest has a capacity of 2,000 pairs of shoes a day, while some of the smaller turn out no more than 200 pairs. It must be added, however, that most of these are run to their fullest capacity. When once foreign tanned leathers and foreign styles can be equaled, the naturally favorable opportunity for the manufacture of boots and shoes in Mexico will be successfully utilized.

These industries already mentioned by no means constitute all

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the activities of that character in the Republic. They embrace, however, the most important ones, and particularly those drawing their raw material from the natural supplies of the country. More capital alone is needed to expand these industries beyond their present status. Many other industries do indeed deserve notice, as they have some close relation to the indigenous riches of the country, or, either in a direct or indirect way, they foster native ambition founded on these resources. For instance, the manufacture of pottery is very general in Mexico. It is carried on everywhere, and in not a few localities it has its distinctive features of quality, design and color. The cities of Cuernavaca, Guadalajara, Zacatecas, Guanajuato and Puebla may be said to be the centers of the industry. Yet, considered from the commercial point of view, it can not be asserted that the making of pottery or earthenware can be classed among the highest developed industries. As artistic productions, nevertheless, these articles deserve great praise, and the domestic methods by which they are made should be preserved.

Glassware is made to some extent, bottles and window glass being the main product, but the abundance of raw material suitable to the industry would warrant a decided expansion as soon as capital sees the opportunity.

Raw material is, in like manner, the basis of the factories producing furniture, of which quantities are made, and of excellent quality, but chiefly for particular requirements, leaving an immense field for the importation of the output of foreign factories. Saw mills are being erected in many parts of the country, and the supply from them is used for furniture and in construction work. There are also paint, candle, soap and hat factories, and works preparing good grades of cement, all deriving their raw material comparatively close at hand. Matches, especially those of wax (*cerillas*), are produced in enormous amounts, and modern machinery has been gradually introduced to make them. In fact the natives have to some extent always turned their raw material to some use, and it needs only the capital and initiative to readjust these historic occupations into modern industrial enterprises.

Two of the newer phases of factory enterprise need mention—the establishments for gunpowder and other high explosives, and those for the meat-packing industry. A company operating in the State of Durango has special privileges from the Government, which amount practically to a monopoly of the manufacture of high explosives, such as dynamite, used in mining and for military purposes. It has its own works with modern machinery for the preparation of the necessary ingredients, and is about able to meet the demand of the country. In addition, the Government itself has entered the field as a manufacturer of

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smokeless powder, and has recently established, under the War and Navy Department, a factory for the production of that explosive. This is located in an isolated place, Santa Fe, just outside of the City of Mexico, and was inaugurated during the centennial celebrations in 1910. Every detail of the manufacture of this explosive is attended to, and the most modern machinery has been provided.

The meat-packing industry is almost the newest phase of Mexico's activities. In spite of the fact that cattle, and this would include sheep and hogs, grow in a wonderfully prolific way throughout the country, preparation of meat for market has, up to very recently, been a matter of the butcher's knife solely. Cattle from the northern States were shipped across the border, to be returned in the form of prepared beef. Today, however, business and scientific methods are fast changing this, and the imperfect systems are being replaced. Packing plants are to be found in several of the cattle districts, but recently a company, equipped with the most substantial machinery, has secured a concession from the Federal Government to erect its plant in Mexico City, in order to take advantage of the immense possibilities of the business there, and to improve the conditions surrounding the supply of meat to the capital.

Thus it is evident that manufacturing has advanced, but that Mexico has not yet reached the stage of the industrial countries of Europe. Conditions are at present unfavorable to the establishment of large centers, where millions of capital and thousands of employees are under the direction of one corporation, but on the other hand the small manufacturer will here find a very encouraging outlook. He who in person oversees his own employees, and who depends to a certain extent upon his own skill, energy and business talent for the success of any enterprise, need seek no better field in which to exercise his knowledge and ability. Mexico is today unequaled in the world (except perhaps by Japan) as a field for the small manufacturer. The docility, skill and imitativeness of the native artisan make him a desirable workman. The cheapness of food products, the abundance and low cost of raw material, and the mildness of the climate, all conduce to the production of goods at a small expense.

The home markets are increasing remarkably. Of the nearly 16,000,000 inhabitants of the Republic, only a small portion, until lately, had the means to buy many things that in other countries are considered necessities. But the extended educational system, the continued prosperity in the Republic, the expansion of railroad and mining activity, have put a large amount of money into circulation; the examples of foreigners, the growth in population following upon peace and prosperity, have like-

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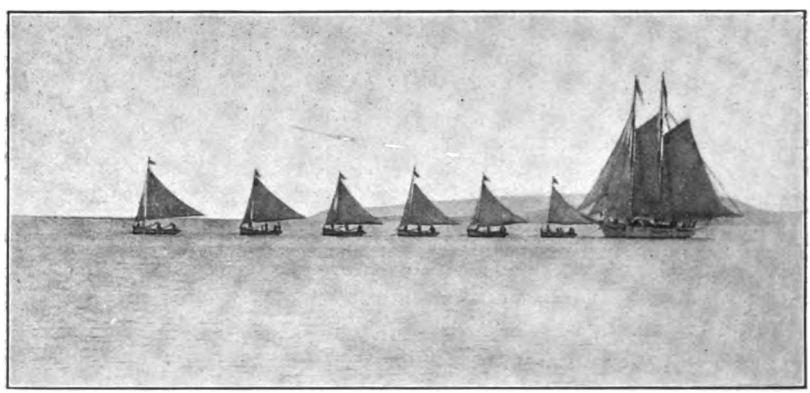
wise stimulated consumption among the people far beyond what it was in former years.

Mexico for the manufacturer has inviting prospects. Native methods can be improved, and new products introduced. Water power from the innumerable streams from the mountains and in the valleys is offered to factories in surprising abundance. Labor is cheap, easily trained and commendably ambitious. The Government maintains a tariff amply protective to home industries, and markets are at hand for all articles worthy of comparison with imported products of a more industrial civilization.



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CHAPTER V.

Finance.

The financial question in Mexico has been one of the most perplexing problems that ever presented itself to the statesman's mind. When the country emerged from its centuries of colonial rule it was confronted with the gravest economic difficulties. The tributary system, based upon monopoly and exclusive privileges, which had prevailed before the separation from Spain, could not be continued under the conditions obtaining among an emancipated and autonomic people. Without any previous experience, they were compelled to change, to improvise, and to try new systems. The many revolutions and consequent disturbances in administration served but to add to the perplexity of the situation, and it has required a high order of ability to bring the finances of the Republic to their present condition.

Nothing is more remarkable, indeed, in the record of Mexico's progress, than the improvements in the finances of the Federal Government. No longer ago than the year 1888 the Budget Committee of the Chamber of Deputies declared that the attainment of equilibrium between the receipts and disbursements of the Federal Treasury was almost an impossibility under the then existing conditions of national finance. But within eight years the financial condition of the country had been so completely reorganized that the annual Treasury statements began to furnish a triumphant refutation of the pessimistic forecast of the Budget Committee in 1888.

The fiscal year 1895-1896 was ended with a surplus, and this fact caused the liveliest satisfaction both at home and abroad. This was the first year in the fiscal history of Mexico where such a result was incontrovertibly achieved.

Public Debt.

A brief résumé of Mexico's public debt will therefore be of interest. In 1823 the Government issued paper money, with results so deplorable that no administration has since ventured to repeat the experiment. By a law of that same year (May 1st) the negotiation in London of a loan of $8,000,000 was authorized. On August 27, 1823, another loan was authorized. These two loans had an original face value of £6,400,000, equivalent at the time to $32,000,000. The sum realized by the sale of the bonds of the two issues was made up as follows:

Loan of 1824 (5 per cent)	£1,283,956	11s	5d
Loan of 1825 (6 per cent)	2,398,582	12	3
	£3,682,539	3	8

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By May 1, 1826, the total debt of Mexico, all principal and interest being considered, stood at £5,281,400, and this sum was the basis and starting point of all subsequent operations and arrangements in regard to what is known in Mexican history as the English debt, but which was finally disposed of in 1886.

On September 30, 1837, the total foreign debt of the Republic, as recognized, was £9,247,378 8s 6d.

On July 1, 1846, the whole foreign debt was consolidated into a loan of £10,241,650. This arrangement was disturbed by the war between the United States and Mexico, and the consequent loss of securities pledged, at the customs receipts at Veracruz and Tampico, for the service.

In 1861 (May 5th) the retiring Minister of Finance gave a statement of the public debt of the Nation at that time, confessedly approximate but of great interest. It was composed of two items—

Foreign debt (principal and interest)	$62,208,250
Interior debt	94,841,495
	$157,049,745

The law of July 7, 1861, whereby the Nation, owing to its financial difficulties, suspended payments to its foreign creditors, was the pretext for the intervention of the allied powers.

The Republic had been restored in 1867, but it had no money and no credit, and had meanwhile accumulated other obligations by loans of various kinds from various countries. After prolonged negotiations, and the rejection by either side of proposals for adjustment of these debts, a successful solution was reached during the early months of President Diaz' second term. Toward the close of 1888 the Financial Agency of Mexico in London issued a statement that the old securities admissible to conversion aggregated £22,741,322, and this sum was reduced by conversion to £14,727,400, the difference being a gain for Mexico. Further arrangements touching this debt were accomplished, so that a debt approximating £23,000,000 was ultimately paid off with £5,890,960.

In effect, the law of 1885 and the arrangements with the English bondholders, proved the good faith of the administration and opened to the Republic the markets of Europe. In 1888 a loan of £10,000,000 (net sum realized £8,238,750) was negotiated, and by this the Government's floating debt was extinguished. In 1889 the Tehuantepec Railway loan was issued, the authorized amount being £2,700,000. In 1890 a loan of £6,000,000 was floated for financing the construction of the Monterrey Tampico Railway. In 1893 emergency loans aggregating £3,000,000 were negotiated, but only £1,890,073 were realized. Conditions grew complicated

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MUTUAL LIFE INSURANCE COMPANY'S OFFICE BUILDING IN MEXICO CITY.

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owing to the crisis occasioned by the fall of silver and a succession of bad harvests, but in 1894 (September 6th) two important laws were enacted by which all claims were to be examined either for recognition or rejection, and the debt thereby uniformized.

In July, 1899, Minister Limantour consummated a financial operation which may be regarded as the first in the fiscal history of Mexico to be effected in accordance with thoroughly sound business principles. This was the conversion of all outstanding gold loans of the Mexican Federation into a new five per cent issue.

The loans embraced in the conversion were the following:

Six per cent loan of 1888, originally	£10,500,000	=	£9,982,800
Six per cent loan of 1890, originally	6,000,000	=	5,852,300
Six per cent loan of 1893, originally	3,000,000	=	2,949,120
Five per cent loan of 1899 (for the Tehuantepec Railway Loan) originally	2,700,000	=	2,673,000
			£21,457,220

This outstanding amount of the four different loans above enumerated was converted into a single new loan earning 5 per cent interest. The principal of the new loan necessarily exceeded the combined principal of the four loans converted, but this had been anticipated, for, by readjusting the loans and reducing the interest on them, the saving to the Republic through the operation was £1,678,981, and in other ways a saving to the public Treasury was accomplished.

The loan of 1899 is guaranteed by an assignment of 62 per cent of the import and export duties, while the coupons are payable four times a year, *i. e.*, on January 1st, April 1st, July 1st and October 1st.

There is a sinking fund service, and a plan by which bonds can be paid off by semi-annual drawings, or even purchased in open market, if the Government so desire.

By these arrangements the loan will be extinguished at the latest by January 1, 1945.

In 1903, and again in 1904, Treasury notes for $12,500,000 (gold) and for $6,000,000 were issued, for payment of public works and for the development of government policy of railway control. These carry 4½ per cent interest.

In November, 1904, a new loan, carrying 4 per cent interest, of $40,000,000 (gold) was negotiated, the special purpose of which was to pay off the Treasury notes of 1903 and 1904 mentioned in the above paragraph, to meet certificates issued in settlement of public works, to pay off certain railway bonds still outstanding, and to continue public works still in construction.

In 1889, the Municipality of Mexico had incurred an indebtedness of £2,400,000 for work on the drainage of the Valley of

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Mexico, and in 1903 the Federal District became subject, in financial matters, to the National Government, this debt as well as the municipal income wherewith to meet it, being made a national affair, but it is evident that by this arrangement the augmentation is nominal rather than real. It should be added in this connection that the Mexican Government has now a law promulgated (on December 18, 1901) with full consent prohibiting the States from borrowing, by means of public issue of bonds, on foreign markets. The credit of the nation is thus protected from adverse influences whether within or without the Republic.

The public debt of Mexico can therefore be given as follows:

	June 30, 1909.	June 30, 1910.
Debt payable in foreign currency:	*Mexican pesos.*	
Face value of bonds in circulation	300,950,996.20	297,411,083.52
Uncollected coupons	3,127,562.26	3,113,912.50
Total	304,078,558.46	300,524,996.02
Debt payable in Mexican currency:		
Face value of bonds in circulation.....	137,849,135.00	136,781,760.00
Uncollected coupons	1,039,973.37	1,068,373.71
Total	138,889,108.37	137,850,133.71
Floating debt:		
Uncollected balances of past budgets	368,679.10	273,398.73
Grand total	443,336,345.93	438,648,528.46

If only the principal of the funded debt be considered the decrease was 4,607,287.68 *pesos;* but if interest be included, the decrease was only 4,592,537.10 *pesos.* Matured but uncollected coupons, as well as bonds called for redemption but not yet presented, figure naturally as liabilities of the nation; but it should be observed that funds for their payment are on hand in the banks having charge of the service of the debt. This really means that the amount of the Public Debt is actually some eight million *pesos* less than the total above given, seeing that the Government has already paid over such sum toward the amortization of that total.

During the fiscal year 1909-1910 considerable amounts of the various securities of the Public Debt were paid off. This condensed table shows the amounts thus redeemed:

	Pesos.
Debt payable in foreign currency	3,539,912.68
Debt payable in Mexican currency	1,067,375.00
Floating debt (non-interest-bearing)	95,280.37
	4,702,568.05

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No new securities of the Public Debt were issued during the fiscal year 1909-1910, so that there is nothing in that respect to set against the amount redeemed.

Revenue and Expenditure.

Every year the finance minister presents to Congress an analysis of the Treasury statement for the fiscal year ended on the previous June 30th. Ordinary revenue and expenditure, by which are meant, respectively, the proceeds of taxes and receipts provided for in the Budget or subsequent votes of the Chamber, were as follows:

REVENUE.

Ordinary revenue from these sources—	1908-1909 *Pesos.*	1909-1910. *Pesos.*
Taxes on Foreign Commerce	40,567,140.92	49,690,357.23
Internal Taxes (chiefly stamp taxes) payable throughout the Federation	31,972,760.97	33,416,417.38
Internal Taxes payable in the Federal District and Territories	11,881,287.13	11,685,234.34
Public Service and Minor Sources	14,354,321.77	11,536,476.15
	98,775,510.79	106,328,485.10

EXPENDITURE.

Budget Divisions—	1908-1909 *Pesos.*	1909-1910. *Pesos.*
Legislature	1,278,670.17	1,395,468.35
Executive	237,083.93	242,718.28
Judiciary	636,145.12	588,831.93
Department of Foreign Relations	1,861,058.64	2,147,952.61
Department of the Interior—		
Ministerial and general	616,730.12	1,002,498.96
Public Health	551,324.99	515,391.68
Rural Police	1,750,712.29	1,789,072.97
Charities (Federal District)	1,252,800.45	1,255,074.35
Administration (Federal District)	7,891,367.27	7,284,536.94
Administration (Fed'l Territories)	380.392.06	379,687.21
Department of Justice	1,567,721.26	1,547,133.89
Department of Public Instruction and Fine Arts	6,458,419.93	6,604.952.48
Department of Promotion (*Fomento*), Colonization and Industry	2,569,088.97	2,655,837.48
Department of Communication and Public Works—		
Sundry Services	5,245,676.57	5,333,708.20
Post Office	5,120,463.69	5,207,179.54
Telegraph Lines	2,771,453.46	2,798,573.01
Department of Finance and Public Credit—		
Administrative Services	8,729,176.83	8,848,609.51
Public Debt	25,870,982.98	26,251,267.32
Department of War and Marine—		
Army	16,270,566.92	17,432,601.54
Navy	1,907,557.66	1,747,554.32
Totals	92,967,393.31	95,028,650.57

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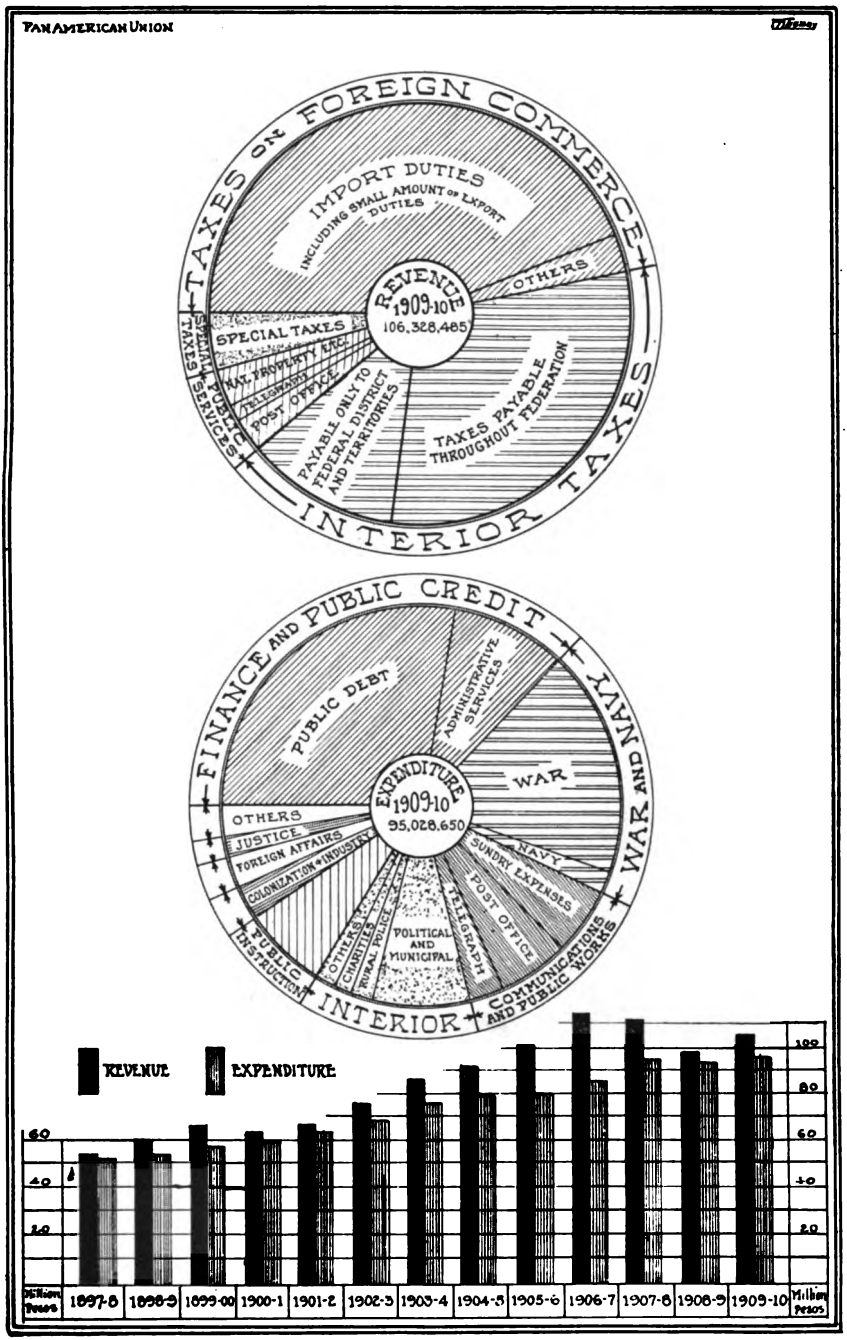

REVENUE AND EXPENDITURE OF MEXICAN GOVERNMENT FOR 1909-10.

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A table of percentages of these expenditures, which gives at the same time comparative proportions of the cost of the Government from year to year, will be of interest.

Percentage of expenditure on departmental disbursements:

Budget divisions.	Percentage of expenditure on departmental disbursements. 1907-08		1908-09		1909-10	
Legislature		1.30		1.38		1.47
Executive		0.30		0.26		0.25
Judiciary		0.62		0.68		0.62
Foreign Relations		2.03		2.00		2.26
Interior Department—						
Ministerial and general	1.24		0.66		1.05	
Public Health	0.56		0.59		0.54	
Rural Police	1.82		1.88		1.88	
Charities, Federal District	1.25		1.35		1.32	
Administration, Federal District	8.64		8.49		7.66	
Administration, Federal Ters...	0.38		0.41		0.40	
		13.89		13.88		12.85
Department of Justice		1.55		1.69		1.62
Department of Public Instruction and the Fine Arts		6.36		6.95		6.95
Department of Promotion (*Fomento*), Colonization and Industry...		2.13		2.76		2.79
Department of Communication and Public Works—						
Sundry Services	7.75		5.64		5.61	
Post Office	4.79		5.50		5.48	
Telegraph lines	3.11		2.98		2.96	
		15.65		14.12		14.05
Department of Finance and Public Credit—						
Administration Services	9.10		9.39		9.31	
Public Debt	28.23		27.83		27.63	
		37.33		37.22		36.94
Department of War and Marine—						
Army	16.63		17.51		18.36	
Navy	2.21		2.05		1.84	
		18.84		19.56		20.20
		100.00		100.00		100.00

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VIEW OF COLONIA JUAREZ, CITY OF MEXICO.

The addition to the western part of the City of Mexico, known as "Colonia Juarez," is a fashionable residential section of the capital. It enjoys all modern improvements, such as asphalted streets, electric lights, and a sewerage system. The streets are lined with rows of shade trees.

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BUDGET.

Ordinary revenue and expenditure, by which are meant, respectively, the proceeds of taxes and receipts provided for in the Budget and disbursements made under appropriations also provided for in the Budget or by subsequent votes of the Chamber, were as follows in the fiscal year 1909-1910:

	Pesos
Ordinary revenue in cash	106,328.485.10
Ordinary expenditures in cash	95,028,650.57
Surplus for the year	11,299,834.53

This surplus affords proof of the disappearance of the financial depression that had prevailed in the Republic since 1908, especially when it is noted that the revenue, as compared with the preceding year, was increased by 7,552,974.31 *pesos*.

A comparative table of estimates in the Budget and collections actually made in 1909-1910, is thus given:

Form of Taxation	Estimates	*Pesos*	Collections	
Taxes on Foreign Commerce—				
Import duties	42,000,000.00		46,566,674.20	
Other taxes	2,709.000.00		3,123,683.03	
		44,709,000.00		49,690.357.23
Interior Taxes payable through the Federation—				
Stamp taxes	30,175,000.00		33,245,585.38	
Other taxes	130,000.00		170,832.00	
		30,305,000.00		33,416,417.38
Interior Taxes payable in the Federal District and Territories		11,287,000.00		11,685,234.34
Public services and minor sources		10,960,000.00		11,536,476.15
		97,261,000.00		106,328,485.10

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The Budget for the current fiscal year, 1910-1911, and that for the coming year, 1911-1912, are as follows:

	Budget for 1910-11	Budget for 1911-12
	Pesos	*Pesos*
Legislature	1,621,976.25	1,621,976.25
Executive	257,738.00	259,749.00
Judiciary	620,607.25	624,711.25
Foreign Relations	1,867,348.40	2,078,412.90
Department of the Interior—		
Office of Minister, and general	957,974.50	723,574.50
Public Health	562,899.96	591,477.46
Rural Police	1,784,083.00	1,928.583.00
Charities of Federal District	1,657,582.75	1,584,079.25
Administration District	7,843,305.75	7,976,521.25
Administration of Federal Ter's	413,993.00	413,993.00
Ministry of Justice	1,611,536.25	1,618,398.25
Public Instruction and Fine Arts	6,970,056.95	7,418,203.00
Promotion (*Fomento*), Colonization and Industry	3,923,816.00	3,993,083.00
Communication and Public Works	15,611,770.05	16,048,325.30
Finance and Public Credit—		
Administration	9,130,750.85	9,203,292.60
Public Debt	26,341,416.39	25,850,815.12
Army and Navy	21,117,175.08	21,667,206.33
Totals	102,294,030.43	103,602,401.46

The estimated revenues have been and are to be derived from the same sources as those already given in the actual revenues collected in previous years to meet those Budgets. Minor sources of revenue, included but not specifically mentioned in the tables, are worth notice. Under Taxes on Foreign Commerce are, besides import duties, export duties; sundry port dues; consular fees; preventive and warehouse dues; pilotage dues; sanitary dues; navigation licenses; transit dues, etc. Stamp revenues are collected from the post office, Federal contribution, mining property, precious metals, manufactured tobacco, alcoholic liquors, cotton yarn and cloth, patents and trade marks, dynamite and explosives, etc. There are dues on assays, melting, refining, etc., and of taxes payable in the Federal District the bulk is made up of direct contributions, predial (land), professional and registration dues, tax on flour and pulque, etc., and succession duties.

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COINAGE.

"Coined money was introduced into Mexico by the Spaniards, and during the first years of the Spanish occupation all coins were imported. In barter the Aztecs used cacao-beans, transparent quills of gold dust, pieces of tin and thin copper, and other symbols. May 11, 1535, the King of Spain authorized the establishment of a mint (*casa de moneda*) in Mexico City, subject to the laws governing Spanish mints. The first mint in New Spain was completed on the site of the present *Palacio Municipal* in 1537, and the first coins were struck that year." The custom was sometimes followed later of renting mints to private individuals who collected a mintage charge of nearly 4½ per cent upon the amount of bullion coined.

"The money (*moneda macuquina,* cut or edgeless coin), issued between 1537 and 1731, was irregularly hammered out, marked with a cross, two castles, two lions, the initials of the king and the Mexican mark. In 1569 the mint was removed to the *Palacio Nacional.* In 1734 a suitable building was completed for the exclusive use of the mint, on the site of the present *Museo Nacional,* where were produced from 1734 to 1771 coins marked with the coat of arms of Spain supported between the two pillars of Hercules; this money was known as the *moneda columnaria.* From 1772 to 1821 was issued the *moneda de busta* because it bore the effigy of the king. Between 1822 and 1823 (after the war of independence) the money bore the profile of Agustin de Iturbide, first Mexican Emperor. The Mexican eagle and the Phrygian cap appeared on the coins issued from that last date to 1862. From 1863 to 1867 the imperial money bore the bust of Maximilian (the emperor). The old republican *peso fuerte* or *duro* dates from 1868. This is replaced by the reformed coins of 1905," and by those of still later dates, such as the centennial (1910) coins, for special occasions.

As late as 1895 there were thirteen mints in the Republic, but as increased facilities of transportation reduced the difficulties attendant upon the carriage of the bullion from mine to mint, the number has been reduced to four, in 1904, and finally the mint in Mexico City is now the only one in operation.

The monetary unit is the silver *peso,* the legal value of which has been fixed at .75 gramme of pure gold. According to the report of the Secretary of the United States Treasury Department, January 1, 1911, this Mexican *peso* had a value in terms of United States money of $0.498, which, allowing for minute fluctuations in exchange and gold, is fixed and permanent.

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Coins of the Republic of Mexico are issued as follows:

Gold

10 *peso* piece (.900 fine and .100 copper), weighing 8.333 1/3 grammes
5 *peso* piece (.900 fine and .100 copper), weighing 4.166 2/3 grammes

Silver

1 *peso* piece (.9027 fine and .0793 copper), weighing 27.073 grammes and containing 24.438 grammes of fine silver.

The *peso* is divided into 100 *centavos*.

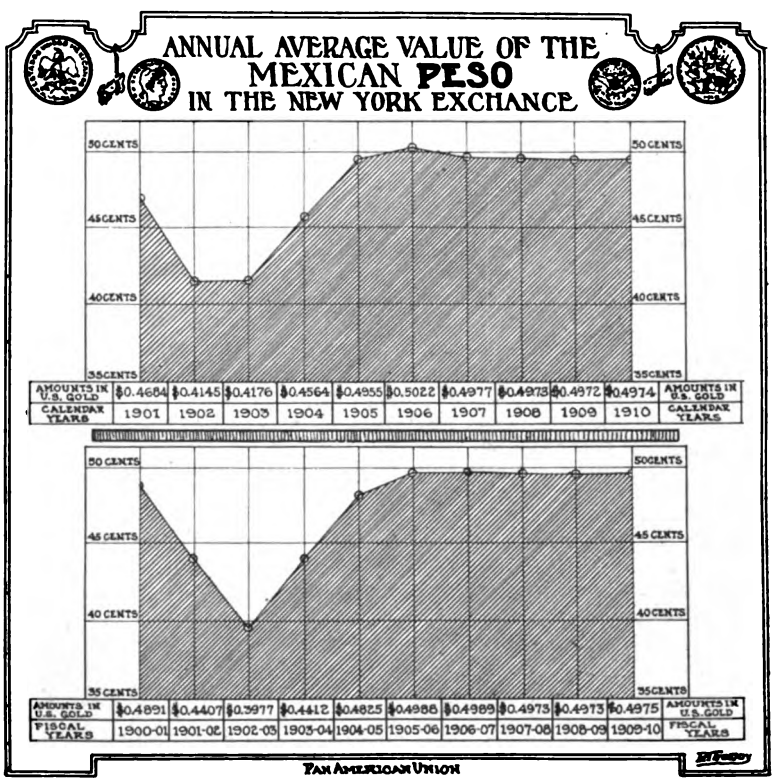
50 *centavo* piece
20 *centavo* piece
10 *centavo* piece
} .800 fine and .200 copper.

Nickel

5 *centavo* piece,

Bronze

2 *centavo* piece
1 *centavo* piece
} 95 parts copper, 4 tin, and 1 zinc.



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Gold coins and 1 *peso* silver coins (of the above national coinage) are legal tender to any amount; fractional coin is legal tender for amounts up to 20 *pesos;* nickel and bronze coins up to 1 *peso.* The right of coinage belongs exclusively to the Executive. There are good bank notes of banks of issue, and these pass at their full face value throughout the Republic, serving the place of gold, which is seldom seen in circulation.

For all practical computations, a Mexican *peso* should be reckoned at $0.50 gold, and $1.00 gold at 2 *pesos.*

Since the enactment of the monetary reform (1905) coinage has resulted as in the following résumé.

New coinage from May, 1905, to June 30, 1910:

	Pesos.
Gold	
In 10 *peso* pieces	59,176,120.00
5 *peso* pieces	29,220,380.00
Silver	
In 1 *peso* pieces	12,574,000.00
50 *centavo* pieces	26,830,619.50
20 *centavo* pieces	3,936,923.80
10 *centavo* pieces	2,271,000.00
Nickel	
In 5 *centavo* pieces	1,110,368.00
Bronze	
In 2 *centavo* pieces	200,968.00
1 *centavo* pieces	740,950.90
Total	136,061,330.20

From 1899-1900 and through the fiscal year 1904-1905 this coinage, with the exception of the nickel pieces, was conducted at the mints situated in Culiacan, Guanajuato, Zacatecas and Mexico City. In 1905 the first three ceased operation; that in Mexico City produced most of the coins, but in 1905-1906 in Philadelphia were coined 25,000,000 *pesos* in gold, in 1906-1907 5,000,000 *pesos* in gold. In 1906-1907 the mints in San Francisco, New Orleans and Denver coined some silver. In 1906-1907 the mint in Birmingham (England) supplied both nickel and bronze coins, but only those of nickel in 1908-1909.

The coinage of money in 1909-1910 was conducted altogether in the Mexico City mint, with the exception of the nickel, 5 *centavo* piece, which came from the mint in Birmingham (England). A résumé is given thus:

	Number of pieces.	Value	
Gold	551,000	5,010,000.00	*pesos*
Silver	6,169,000	2,884,000.00	"
Nickel	4,121,200	206,060.00	"
Bronze	550,000	5,500.00	"
Total	11,391,200	8,105,560.00	

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BANKS.

Use of the word "bank."—On May 28, 1903, a Presidential decree was promulgated bearing on this subject, as follows:

"ARTICLE 1. Only corporations legally constituted for the operation of institutions of credit, by virtue of concessions granted by the Government, can use the name of 'bank' or its equivalent in any foreign tongue as part of their corporate titles or establishments.

"ART. 2. The charter of any company, of which the word 'bank' or its translation into any foreign tongue forms part, can not be recorded in the commercial registry unless the articles of incorporation contain official documents proving the existence of a concession granted to said company by the Department of Finance and Public Credit, in accordance with the provisions of the general law on institutions of credit.

"ART. 3. Notwithstanding the provisions of Article 1 of this act, native or foreign corporations at present existing in the Republic and embodying in their corporate name the word 'bank,' or its translation into any foreign tongue, may continue to use the same name as hitherto, by adding the words 'without concession' every time they use their commercial title.

"ART. 4. Foreign corporations having, or that may establish, agencies or branch houses in the Republic in accordance with Mexican laws, shall be entitled to make use of the word 'bank.'

"In order to enjoy this right, such foreign companies must previously obtain a special permission from the Department of Finance and Public Credit. This permission will only be granted under such conditions as the Department may deem expedient, and when in its opinion it is proved that the parent house does a banking business in the country where it was founded, and no valid reasons exist for fearing that an improper use will be made of the franchise.

"ART. 5. Within a year from the date of the present law, native or foreign corporations in the Republic using in their corporate name the word 'bank,' or its translation into any foreign tongue, must either change said name by the suppression of such word, or make use of the right granted by Articles 3 and 4 of this law.

"ART. 6. Any action growing out of the violation of the provisions of this law, either by the improper use of the word 'bank,' or by failure to add the words 'without concession,' when they are required to be used, shall be brought ex officio by the prosecutor before the Federal courts, and shall be punished by a fine of the second class. If the offender is a company, its managers or administrators shall pay the penalty."

The oldest banking institution of Mexico is the *Monte de Piedad* (National Pawn Shop), which was established in 1775 with a capital of $300,000, given by Don Pedro Romero de Terreros. Formerly it possessed the authority to issue notes, but this has been revoked and all the notes redeemed. It is now in reality a charity, the business of which amounts to over $1,000,000.00 annually, but a savings bank department is still run in connection with the institution.

At the end of the fiscal year 1909-1910 (June 30th) there were in existence 24 banks of issue (*emisión*), 2 loan (*hipotecario*) banks, and 6 banks of encouragement (*refaccionario*).*

*A list of these banks is given in the Appendix, page 366.

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MINERAL BANK OF THE CITY OF CHIHUAHUA.

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The condition of these banks is reported thus:

BANKS OF ISSUE.
(Bancos de Emisión)

Assets.	June 30, 1910. *Pesos.*	*Liabilities.*	June 30, 1910. *Pesos.*
Uncalled capital	634,600.00	Capital	118,800,000.00
Cash:		Reserve funds	33,209,374.26
Gold specie	53,690.870.00	Emergency funds.....	19,358,161.82
Silver.....	27,625,377.00	Deposits payable on demand or at three days' notice	67,826,271.91
Subsidiary coins..	5,705,834.83	Time deposits	58,026,027.36
Gold bullion	2,037,720.62	Notes in circulation...	112,160,663.00
Total cash and bullion	89,059,802.45	Sundry creditors	390,247,117.79
Notes of other banks.	4,515,757.00	Total liabilities ..	799,627,616.14
Total cash, bullion and notes	93,575,559.45		
Public funds, shares and bonds	60,402,271.28		
Notes discounted	85,056,939.96		
Loans on collateral...	41,245,501.02		
Loans on mortgage ..	11,816,322.65		
Sundry debtors	494,543,381.03		
Real estate	12,353,040.75		
Total assets....	799,627,616.14		

BANKS OF ENCOURAGEMENT.
(Bancos Refaccionarios).

Assets.	June 30, 1910. *Pesos.*	*Liabilities.*	June 30, 1910. *Pesos.*
Uncalled capital	1,800,000.00	Capital	47,800,000.00
Cash:		Reserve funds	2,347,721.16
Gold specie	2,663,610.00	Emergency funds	5,041,097.09
Silver.....	173,692.00	Deposits payable on demand or at three days' notice	12,257,661.13
Subsidiary coins..	139,033.52	Time deposits	14,122,211.26
Total cash	2,976,335.52	Cash bonds in circulation	4,893,200.00
Bank notes	1,818,302.00	Sundry creditors	51,536,883.71
Total cash and notes	4,794,637.52	Total liabilities ..	137,998.774.35
Public funds, shares and bonds	12,249,173.77		
Notes discounted	22,062,725.13		
Loans on collateral...	19,165,078.11		
Loans on mortgage...	1,132,910.35		
Loans of encouragement	2,174,794.29		
Sundry debtors	73,103,151.00		
Real estate	1,516,304.18		
Total assets	137,998,774.35		

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MERCANTILE BANK, MONTERREY, STATE OF NUEVO LEON.

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Loan Banks.
(Bancos Hipotecarios).

Assets.	June 30, 1910.
	Pesos.
Uncalled capital	1,500,000.00
Cash:	
Gold specie	1,121,270.00
Silver.....	273,100.00
Subsidiary coins..	43,163.86
Total cash	1,437,533.86
Notes of other banks.	505,960.00
Total cash and notes	1,943,493.86
Public funds, shares and bonds	2,811,054.08
Notes discounted	470,304.61
Loans on collateral ..	1,858,711.73
Loans on mortgage...	46,872,918.47
Sundry debtors	11,200,213.37
Real estate	975,953.79
Total assets	67,632,649.91

Liabilities.	June 30, 1910.
	Pesos.
Capital	10,000,000.00
Reserve funds	785,572.41
Emergency funds	719,500.00
Deposits payable on demand or at three days' notice	2,939,632.94
Time deposits	1,193,849.85
Mortgage bonds in circulation	44,904,600.00
Sundry creditors	7,089,494.71
Total liabilities ..	67,632,649.91

Banco de Hidalgo, Pachuca, State of Hidalgo.

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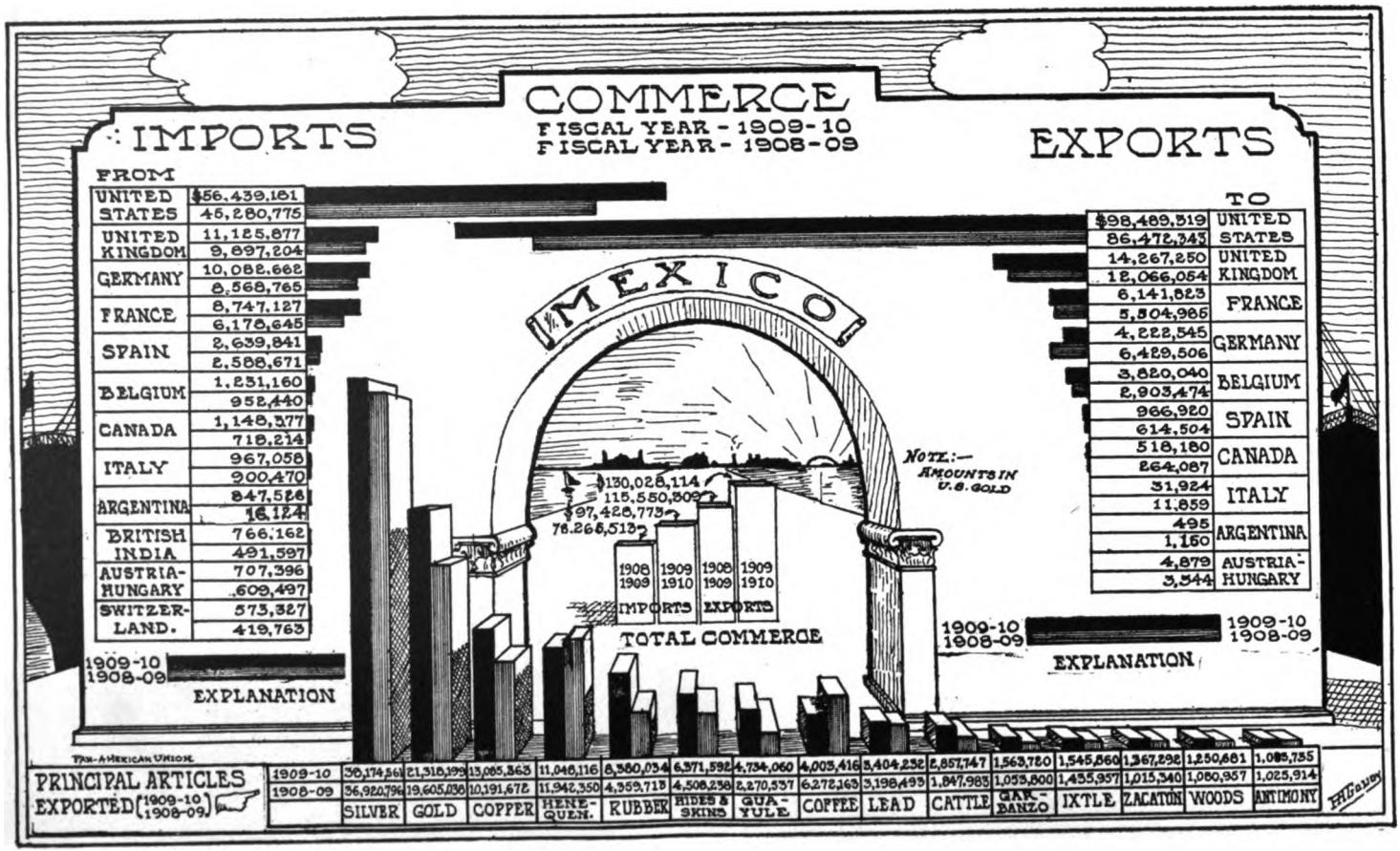

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CHAPTER VI.

Commerce.

The history of the commercial development of Mexico is deeply interesting, and the student should follow it step by step in the literature descriptive of the early periods of colonial, imperial and republican development. The natives of the Western Hemisphere, even before its discovery and conquest, maintained a rudimentary commerce, and in Mexico, among the Aztecs, such as were engaged in international trade were highly honored, and were designated as Pohtecas. Instead of coins, copper pieces in T shape, grains or nuggets of gold, cacao nuts, etc., were used. True commerce, which necessarily entailed the use of metal coins, did not exist before the conquest, and it was not until the Spaniards found that gold and silver were becoming scarce that they thought of creating a trade between the new possessions and the mother country.

As a consequence, Spanish vessels loaded with merchandise began to arrive at the ports of Veracruz and Campeche, taking, on their return trips, immense cargoes of hides, indigo, tobacco, dyewoods and other products. This trade increased with the establishment of the mint in Mexico, the first in the new world, but it was hampered to a great extent by the difficulties encountered between Spain and Mexico and the English and French pirates who infested the ocean. The port of Acapulco was early opened to the products of the Philippine Islands, which were so valuable that it was claimed that each vessel freighted at Manila had on board merchandise worth 2,000,000 *pesos*.

Trade then sprang up with China, Japan and Peru, so that Mexico, in the sixteenth century, was the greatest commercial center of the then known world. During the seventeenth and eighteenth centuries domestic trade began to be developed and foreign commerce fell off, owing to the constant wars between Spain and the various nations of Europe.

At the beginning of the nineteenth century the foreign trade of the Republic revived, reaching, it is claimed, the sum of 25,000,000 *pesos* for imports and over 16,000,000 *pesos* for exports. Until 1876, however, the unsettled condition of the country was a serious impediment to the line of development; but as soon as peace was established there began the construction of railroads which brought with them increased activity in commerce, industries and the arts—in short, of every branch of public prosperity and wealth.

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Domestic Trade.—The domestic trade of the country is made up of the interchange of national products, and of the exchange of products of native industry for such as either are not indigenous to the country or if so are produced on too small a scale to meet the requirements of native consumption; hence the necessity for importing such goods as are required to make up the balance of trade and for using them in interior commerce. The domestic trade of the country had for generations been hampered by the *alcabala* tax, a payment levied through a series of interior custom-houses upon transportation of goods whenever they changed hands. It was equivalent to an interstate tariff, and in some cases it was really a tariff between town and town in the same state.

To the *alcabala* has been ascribed the decline of the manufactures and agriculture of Spain; and in Mexico it undoubtedly was both an economic and political evil, encouraging as it did a spirit of exaggerated regionalism, so that the production of any part of a country suffering under it must be proportioned only to its local capacity for consumption.

The Constitution of February 5, 1857, ordained that by July 1, 1858, the *alcabalas* and interior custom-houses should be abolished throughout the Republic, but this class of taxes had struck such deep root in the commercial habits of the country that in spite of the Constitution no administration before that of President Diaz had been able to accomplish their elimination. But by measures enacted in May, 1896, and which became effective on July 1st, of that year, these *alcabalas* were suppressed with no serious inconvenience or perturbation of economic conditions. In fact, as the presidential message of September 16, 1896, declared, the receipts of the Federal exchequer actually increased during the very first months that elapsed after this step had been taken.

Foreign Trade.—Mexico's international commerce has taken on a new character since the foundation of the Republic. In the first place native industry has been so fostered that the natural richness of the soil and the abundant vegetation possible in such a variety of climates can respond to the cultivation of it, the old dependence upon mineral wealth having lost its unwholesome prominence; and in the second place the restrictions of a false economic policy have been removed, so that there is permitted a reasonable exchange of commodities, according to which the best market can be sought both for the sale of national products and for the purchase abroad of such material as best meets the needs of the consuming public within the country.

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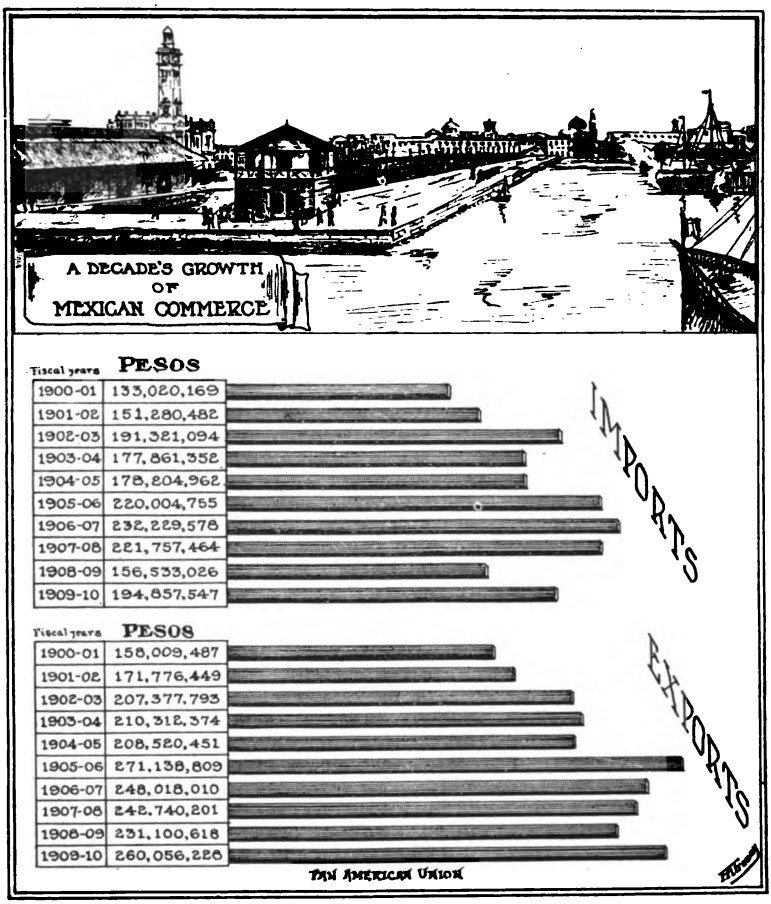
The accompanying table shows the growth of the foreign commerce for the last decade. An analysis of Mexico's trade condition in greater detail results as follows:*



The total foreign trade for the fiscal year 1909-10 amounts to $227,451,908, United States *gold,* an increase over the preceding year of 17.3 per cent, or $33,640,064.77. The value of exports was $130,023,135, against $115,550,309 of the preceding year,

*This is not a complete analysis of the foreign commerce of the Republic. Further details can be given, however, to those interested in any particular subject. In Appendix XI, page 370, are found the headings and subdivisions under which Mexico classifies articles imported and exported. This Appendix contains also the rules covering passengers' baggage.

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a net gain of $14,477,804. The import trade totaled $97,428,773, compared with $78,266,513 for the year previous, a gain of $19,162,260. These totals represent a balance of trade in favor of Mexico amounting to $32,599,340.

The imports, by principal countries, in order of value were:

Countries.	1909-10	1908-09	Countries.	1909-10	1908-09.
United States.	$56,439,181	$45,280.775	Canada	$1,148,377	$718,214
Great Britain.	11,125,877	9,897,204	Italy	967,058	900,470
Germany	10,082,662	8,568,765	Argentina	847,526	16,124
France	8,747,127	6,178,645	British India	766,162	491,597
Spain	2,639,841	2,588,671	Austria-Hungary	707,396	609,497
Belgium	1,231,160	952,440	Switzerland	573,327	419,763

It will be noted, from the above table, that the exports into Mexico from the countries mentioned show a decided increase over the preceding year. Imports from France increased 41.5 per cent, United States 24.6 per cent, Germany 17.6 per cent, Great Britain 12.4 per cent. In this year the import trade with Argentina resumed the normal proportions from which it fell last year.

Other countries sharing notably in the increase of their exports to Mexico and not included in the above table were:

Countries.	1909-10.	1908-09.
China	$240,912	$95,628
Russia	185,455	35.228
Portugal	100,931	39,466
Guatemala	21,453	9,591
British Honduras	16,698	3,564

By world divisions, the increase in imports from Europe amounted to $6,315,521.11; from Asia, $457,394.73; from Africa, $15,085.24; from North America (Canada, $430,163.01; United States, $11,158,406.06), $11,588,569.07; from Central America, $42,600.77; and from South America, $752,883.30.

There were slight losses in the import trade from Japan, Egypt, Brazil, Chile, Ecuador, Panama, and Peru, amounting in all to approximately $166,250.

The imports for the year 1909-10 under eleven major classifications are as follows:

Classification of Imports.	1909-10	1908-09.
Mineral substances	$27,930,414	$22,294,220
Vegetable substances	21,355.727	14,683,290
Machines and apparatus	10,473,584	10,060,751
Textiles and manufactures thereof	10,106,837	7,952,336
Animals and animal substances	7,505,492	6,284,203
Chemicals and pharmaceutical products	5,619,165	4,827,861
Wines, liquors, and beverages	3,276,407	2,783,193
Vehicles and cars	2,877,097	2,156,646
Paper and its manufactures	2,523,353	2,324,232
Arms and explosives	1,450,892	1,266.550
Miscellaneous	4,309,806	3,633,729

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Under* the heading of mineral substances, iron and steel form the principal items, divided into two classes: First, construction and industrial material, $11,017,899; and second, manufactures, $2,797,703; total, $13,815,602. Stones, earths, and manufactures thereof were imported to the value of $9,203,661. Under vegetable substances are classified raw textile fibers, $2,465,181; fruits and grains, $10,036,829; wood and lumber, $2,750,818; manufactures of wood, $2,297,608. Under textiles and manufactures thereof were imported cotton goods, $5,411,467; linen, hemp, etc., $606,237; woolen goods, $2,221,262; silks, $1,137,746; silk mixed with other fibers, $622,220; artificial silk, $107,902. Under animal substances were: Live animals, $693,690; meats, skins, horns, etc., $698,832; animal products, canned meats, eggs, butter, cheese, etc., $3,276,666; shoes, skins, hides, and fur manufactures, $2,836,304.

The total value of Mexican imports via Gulf ports was $58,529,357.78. The principal Gulf port was Veracruz, with $34,674,590.63; next to this came Tampico, $18,477,784.99; Progreso, $2,760,624.80, and Coatzacoalcos (Puerto Mexico), $1,546,422.74. In order, with lesser amounts, then came Frontera, Chetumal, Campeche, Isla del Carmen, Tuxpam, and La Ascension.

Imports via the northern frontier were of the value of $30,907,258.97, received through the 15 custom-houses, the principal of which were Laredo, with $13,414,582.26; Ciudad Juarez, $7,496,555.91; Ciudad Porfirio Diaz, $4,654,792.25; Nogales, $2,579,505.42, and La Morita, $1,539,943.24.

Imports via Pacific ports were of the value of $7,896,420.53, and the principal ports were: Guaymas, $2,408,033.60; Mazatlan, $1,767,912.28; Manzanillo, $1,537,336.83; Santa Rosalia, $1,006,584.45; Salina Cruz, $397,675.10, and Acapulco, $267,888.27. In all there were 13 Pacific ports through which imports were received.

Imports of the value of only $95,736.21 came via the southern frontier through the two custom-houses, Soconusco, $85,399.87; and Zapaluta, $10,336.34.

Practically all of the live animals were imported from the United States, $656,265 out of a total of $693,690 coming from there. Mexico imported very little fresh meat, but of preserved meat and fish, out of a total of $185,232 the United States furnished $146,390, Norway coming next with $24,272. Of a total of canned meats, $1,116,229, the United States supplied $544,141, Spain $230,625, and France $102,517. Practically all the eggs imported, $107,800, came from the United States, and the same can be said of the $1,047,300 of lard. Of butter, $169,800, the United States leads with $127,600, followed by Denmark,

*Figures for only fiscal year 1909-1910 are hereafter quoted.

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$25,800. In cheese, Holland leads with $135,700, next the United States with $90,900, then Spain with $24,000, of a total of $275,600.

Of general leather goods, the importation was $215,000, and the United States supplied $89,700, Germany $47,300, France $32,400, and Great Britain $25,100 worth. Leather bands and cables, $183,200, from the United States $120,000, from Great Britain $47,500. Cured skins were imported to the amount of $480,000, of which $212,700 came from the United States, $204,200 came from Germany, and $48,700 from France, France sending, as might be supposed, the greatest proportion of gloves. Two million and thirty thousand dollars' worth of boots, shoes and slippers came into Mexico, $1,400,000 from the United States, $95,000 from Spain, and $20,000 from France.

Almost all the raw cotton imported came from the United States, close to $2,000,000.

Of condiments and cacao, about $575,000 in all, Hindustan and the Far East furnished $221,000, but Spain sent $153,000, although Venezuela, Santo Domingo, Colombia and Ecuador controlled the cacao imports.

Rice, $200,000 in all, $125,000 came from the Far East, but the United States sent $28,000, and Germany $15,000. Of dried and preserved fruits, over $300,000 were imported, Spain leading with $112,000, followed by the United States with $110,000. Fresh fruits and vegetables, on the other hand, $237,000, came from the United States to the amount of $205,000, and only $17,500 from Spain. Of preserved fruits, $200,000, the United States supplied $90,000, France $44,000, Spain $29,000, and Great Britain $12,500. Maize was imported, $2,700,000 worth, almost all from the United States, but both Germany and Argentina sent recognizable amounts. Forty-six thousand dollars' worth of tea was imported, but the United States (as an intermediary, of course) was credited with $13,500, the rest coming from the Far East. Two hundred and thirty thousand dollars' worth of olive oil was imported, $137,000 of which came from Spain, $85,000 from France, and only $5,000 from the United States. Of sugar, $97,000, the United States supplied $89,000 worth. Flour of various kinds came from all over the world, $312,000, but the greatest quantity, $265,000, from the United States.

Wood for building, and materials made from it, were in demand, $2,750,000 being imported, of which almost all came from the United States, but also Canada, Japan, Spain, France, Germany and Great Britain furnished varying quantities for special purposes. Of furniture, $725,000 worth were brought in, about $500,000 of which came from the United States, $87,500 from

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Austria-Hungary, and a small but select amount from France, Germany, England and Spain.

Copper, brass and bronze to a sum slightly over $1,125,000 were imported, most of these metallic supplies from the United States.

Of construction material in steel and iron, with manufactured articles of the metal, $14,000,000 worth were imported; of these quantities, by specific articles, the United States furnished $593,000 of fencing, against $52,000 from Germany; of plows and their parts, the United States furnished $448,000, against $46,000 from Great Britain; of cables, the United States furnished $143,000, against $26,000 from Great Britain and $4,000 from Germany; of piping, the total of which amounted to $3,153,000, the United States furnished $1,843,000, Germany $65,000, and Great Britain $720,000. Other minor items illustrate nearly the same relative proportions.

Italy supplied almost all the sulphur—$14,000 out of $18,500. The amount of lime imported was $560,000, of which the United States sent $144,000, Germany $170,000, Great Britain $165,000, and Belgium $67,000. Of the coal imported, $2,500,000, more than $1,500,000 came from the United States, about $700,000 from Great Britain, $206,000 from Canada, $42,000 from Germany, $3,500 from Japan. Mineral oil, refined and crude, was imported to the amount of $2,378,000, the only source of supply, besides the United States, being Austria-Hungary with $162,000, Great Britain with $98,000, and Germany with $76,000.

Common bottles to the value of $317,000 were imported, of which $177,000 came from the United States, and $100,000 from Germany, Austria-Hungary, Sweden and Great Britain supplying a minor proportion. Of glassware, $733,000, excluding mirrors and such special products, as much as $335,000 came from the United States, about $125,000 from Germany, $70,000 from Great Britain and the same quantity from France, chiefly articles peculiar to the factories of that country.

Cotton textiles, the gross importation of which aggregated $5,411,000, came in about the proportion of $2,600,000 from Great Britain, and $400,000 from both the United States and Germany—Belgium, Spain France and Holland contributing specialties in smaller amounts. Cotton clothing came largely from Europe, although the amount from the United States is increasing noticeably. Of linen and hemp textiles, $606,000 in all, Great Britain supplied $225,000, Germany $110,000 and the United States $20,000, France and Belgium having as usual their share of selected goods. Of woolen textiles, $2,221,000 in all, Great Britain supplied $721,000, Germany $440,000 and the United States $209,000, France having in this case a large propor-

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tion of the balance; of the ready made clothing, however, the United States and France supplied by far the heaviest share. Of silk textiles, $1,138,000 in all, $522,000 came from France; $171,000 from Germany; $130,000 from the United States; $32,000 from Great Britain, while from China, Japan and the Philippines, strange to say, although goods from those countries have long been popular in Mexico, very little was imported, the supposition being that purchase of them was made through other sources. In silk goods combined with other textures, France was almost supreme.

Mexico imported drugs and chemicals to the amount of $5,669,000. Of this sum, Germany supplied $1,315,000; the United States $1,136,000, and Great Britain $838,000. Again, in this case, France and Spain, with other countries, sent respectable quantities, but chiefly those for which the products are particularly distinguished.

Of wines and associated drinks, the sum imported was $3,277,000. Spain supplied $670,000; the bulk of the remainder came from France, $1,800,000; from the United States, $280,000; from Great Britain, $80,000; and from Germany, $75,000.

Paper and its manufactures amounted to $2,523,000, the United States furnishing $750,000; Germany $400,000; and Great Britain $70,000, France and Spain sending specialties, particularly so as regards music, maps, books and cards.

Machines and apparatus, one of the largest classifications of the Mexican foreign trade, gave a total of $10,470,000, generally divided in gross figures as $6,680,000 from the United States; Great Britain, $1,446,000; Germany, $1,060,000; representing the principal sources of supply, the remainder coming from Austria-Hungary, France and Belgium.

In regard to vehicles, of which Mexico imported $2,877,000, one of the chief subdivisions is that of automobiles; of those imported, France supplied $194,000, the United States $484,000, Germany $84,000 and Great Britain $12,000. Of railway cars, the total importation of which amounted to $953,600, the United States supplied $873,300, Great Britain $59,000 and Germany $20,000.

Arms and explosives, $1,450,000, of which, in the form of side arms and cartridges, there came from the United States the value of above $352,000, from France $140,000, from Germany $35,000, from Belgium $33,000, and from Great Britain $6,000. All the dynamite came from the United States, $543,000.

One of the most important among the miscellaneous items is that of musical instruments, of which $593,000 was the total; the United States contributed $343,000, Germany $206,000, France $56,000 and Great Britain $1,000.

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The Gulf ports maintaining custom-houses are Campeche, Coatzacoalcos (Puerto Mexico), Chetumal, Frontera, Isla del Carmen, La Ascensión, Progreso, Tampico, Tuxpám and Veracruz. The Pacific ports are Acapulco, Altata, Bahia de la Magdalena, Ensenada, Guaymas, La Paz, Manzanillo, Mazatlan, Puerto Angel, Salina Cruz, San Blas, Santa Rosalía, and Topolobampo. The custom-houses on the northern frontier are Agua Prieta, Boquillas, Camargo, Ciudad Juarez, Ciudad Porfirio Diaz, Guerrero, La Morita, Laredo, Las Vacas, Los Algodones, Matamoros, Mexicali, Mier, Nogales, and Tijuana; and those on the southern frontier are Soconusco and Zapaluta.

The exports from Mexico, by countries, in order of value, were:

Exports by countries.	1909-10	1908-09	Exports by countries.	1909-10.	1908-09.
United States.	$98,489,319	$86,472,343	Spain	$966,920	$614,504
Great Britain.	14,267,250	12,066,054	Canada	518,180	264,087
France	6,141,823	5,504,985	Italy	31,924	11,859
Germany	4,222,545	6,429,506	Austria-Hungary	4,879	3,344
Belgium	3,820,040	2,903,474	Argentina	495	1,150

While Mexico's export trade increased with nearly every country mentioned in the above table, there appears a notable falling off in the value of products shipped to Germany, amounting to nearly $2,250,000; the small trade with Argentina was also reduced more than a half.

By world divisions, the increase of exports from Mexico to Europe amounted to $1,953,274. During this year Mexico exported to Sweden goods valued at $15,648, whereas during the preceding year it had no export trade with her. The increase in Asia was $2,368; in North America (Canada, $254,093; United States, $12,016,976), $12,271,069. In Central America the increase was very marked, particularly in the trade with British Honduras and Guatemala, and totaled $198,150. The South American trade showed losses in Ecuador, Peru, and Argentina, but the total shows a gain in favor of Mexico amounting to $8,129.

The exports for the fiscal year under five major classifications were:

Classification.	1909-10.	1908-09.
Mineral products	$78,260,458	$72,136,413
Vegetable products	38,862,402	33,965,277
Animal products	10,052,092	6,969,673
Manufactures	1,768,295	1,273,940
Miscellaneous	1,084,863	1,205,006

Under the heading of mineral substances, the principal exports were: Gold and ores, $21,313,201; silver and ores, $38,-

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MEXICO — MINERAL EXPORTS.

GOLD

FISCAL YEARS	PESOS
1900-01	8,736,263
1901-02	9,141,294
1902-03	9,469,313
1903-04	10,726,439
1904-05	26,361,881
1905-06	31,695,777
1906-07	23,873,713
1907-08	31,921,298
1908-09	39,210,076
1909-10	42,636,399

SILVER

FISCAL YEARS	PESOS
1900-01	53,036,016
1901-02	48,021,133
1902-03	77,554,713
1903-04	79,110,689
1904-05	65,523,645
1905-06	125,400,083
1906-07	99,861,790
1907-08	124,934,065
1908-09	72,841,592
1909-10	76,349,121

COPPER

FISCAL YEARS	PESOS
1900-01	11,177,753
1901-02	16,849,833
1902-03	20,122,338
1903-04	23,234,216
1904-05	29,803,420
1905-06	26,655,897
1906-07	28,792,778
1907-08	24,833,261
1908-09	20,383,345
1909-10	26,170,727

LEAD

FISCAL YEARS	PESOS
1900-01	5,066,645
1901-02	5,730,645
1902-03	5,671,149
1903-04	4,825,619
1904-05	5,504,645
1905-06	4,967,795
1906-07	3,644,736
1907-08	5,343,225
1908-09	6,396,986
1909-10	6,808,465

PAN AMERICAN UNION

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174,561; copper and ores, $13,085,363; lead, $3,404,233; antimony and ores, $1,093,735; and zinc ores, $575,279.

The principal vegetable products exported, in order of importance, were:

Henequen	$11,048,116
Rubber	8,380,034
Guayule	4,734,060
Coffee	4,003,417
Chicle	1,704,784
Garbanzo (Chick-pea)	1,563,720
Ixtle	1,545,860
Raiz de Zacaton	1,367,293
Wood and lumber	1,250,681
Vanilla	788,539
Beans	562,177
Tobacco (unmanufactured)	331,114
Cotton	230,209
Dyewoods	213,679

Among the animal product exports, undressed skins and hides rank first with a total of $6,371,592; cattle follows with $2,857,748. Honey is sent out of the country to a small extent, $67,667, and pig skins valued at $64,209.

Of manufactured products exported, sugar leads with a total of $720,420; palm-leaf hats rank second with $300,937, followed by cotton-seed meal and cake $278,681, and manufactured tobacco $175,744.

Analyzing Mexico's exports more in detail, the principal minerals sent out of the country were gold and gold ores, $21,313,201, almost all of which went to the United States, although Great Britain took $1,325,000, Germany $337,000 and Belgium $557,000. Of silver, the total was $38,174,561, most of this also going to the United States, but Great Britain received $3,902,000; Belgium $2,051,000; Germany $743,000, and France $111,000. Great Britain took all the antimony, $1,093,735. Of copper and its minerals, $13,086,107 in all, the United States received $7,639,000; France, $3,292,000; Great Britain $2,155,000. The total lead export was $3,402,361, the United States receiving $2,030,000; Great Britain $797,000; Belgium $413,000, and Germany $138,000. Zinc mineral was divided between the United States, $467,681; Belgium, $66,293; Germany, $26,279, and Great Britain, $15,026.

The exports of vegetable products were thus divided: Henequen, to the United States $10,703,000, so that but small quantities were left for Great Britain, Cuba and Belgium. Of ixtle, $1,545,860, the United States took $1,021,000; Germany $396,000, and Great Britain $52,000, the remainder going to France, Belgium and Cuba. France and Germany divided the raiz de zacatón about equally between them. The rubber, $8,380,034,

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went largely to the United States, $2,415,000, but France received $736,000, Germany $519,000, Great Britain $213,000, other countries in lesser amounts. Guayule went chiefly to the United States, $3,768,000, but Germany took $544,000, and France $370,000. Coffee, the export of which was $4,003,417, was sent to the United States for a value of $2,415,000; to France, $737,000; to Germany, $519,000; to Great Britain, $203,000, and to a much smaller extent to Canada and the rest of Europe. Chicle went almost altogether to the United States, either direct or through Canada and British Honduras. The beans (chick peas, *garbanzos*), $1,563,720, went largely to Spain, although Cuba took $304,000 and the United States with Puerto Rico $333,000. Of the wood and lumber exported, the value of $740,000 went to the United States, and over $380,000 to Great Britain, but British Honduras is accredited with $62,000, part of which must have gone to Great Britain.

Of unmanufactured tobacco, $331,000 in all, Belgium received $196,000, Germany $90,000, and the United States, Cuba and Peru, each only small quantities.

Animal products constitute the third largest division of exports from Mexico. The principal article is that of skins, of which cattle (*res*) hides form the larger proportion. The export of these amounted to $3,994,000, of which $3,685,000 went to the United States, $132,400 to France, $127,000 to Germany, the other European countries taking but small quantities. Of goat skins, $2,008,000 were sent abroad, the United States receiving $1,954,000, France $133,440, and but small quantities to Germany and Spain. The United States took most of the deer, alligator and sheep skins. Cattle, $2,518,000, went almost altogether to the United States, but Guatemala received $139,000 worth.

Manufactured products form the smallest class. The chief articles are sugar, $720,000, practically all to Great Britain; palm hats, $301,000, practically all to the United States; and manufactured tobacco, practically all to France, with small allotments to Germany and Great Britain.

All products from the Republic pass through the same classified ports as goods brought into the country. From the Gulf ports were sent abroad $77,164,305; from those on the Pacific Ocean, $7,040,442; across the southern frontier, $338,122; and across the northern frontier, $45,480,267. The total of exports was therefore $130,023,135, in the fiscal year ending June 30, 1910.

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CHAPTER VII.

Means of Communication.

Railroads.

In 1854 a line of about 16 kilometers (9.94 miles) was placed in operation between Veracruz and Tejería. In 1854 the first section, about 4 kilometers (2½ miles) of what afterwards became the Mexican Railway was finished, connecting the City of Mexico with Guadalupe. This was the beginning of the remarkable railway development that has taken place in the Republic within the last half century. Before that, means of communication were limited to wagon roads and bridle paths; diligencies were in service, sometimes litters (*literas*) were employed, but in the best of circumstances it was a bone-breaking trip of three days from the capital to the coast, a distance easily covered to-day in 12 hours.

The French army, during the war of intervention in 1862, carried the Tejería section as far as Paso del Macho (both of these places are stations on the present Mexican Railway) at the foot of the mountains, a distance of 77 kilometers (47.8 miles). About this time an English syndicate, which had a concession from the Government to build a road from the capital to Veracruz, extended the Guadalupe line, the entire distance being completed and the main line formally inaugurated January 1, 1873.

It is from this period that the era of railroad development dates, new impetus being given to this branch of the public service when General Diaz became President of the Republic in 1876. From 1877 to 1882 Mexico built more miles of railroad than any other Latin-American country, the average yearly construction during that period being 689 kilometers (428 miles). In 1875 there were 578.28 kilometers (360 miles) of road; in 1886, 5,915 kilometers (3,675 miles); in 1888, 7,940 kilometers (4,933 miles); in June, 1892, 10,233 kilometers (6,358 miles); in September, 1894, 11,100 kilometers (6,897 miles); in April, 1897, 11,469 kilometers (7,126 miles), and at the end of 1900 there were 13,615 kilometers (8,460 miles) completed under Federal concession. This takes no account of the lines extended under concessions from the States, which, for the most part, were not then railways in the usual sense of the word.

From the beginning of the twentieth century construction has been even more rapid. In 1905 the length of line amounted to 16,991 kilometers (10,557 miles), and according to the message of the President on September 16, 1910, the one-hundredth anniversary of the independence of the Republic, there were then in operation 24,559 kilometers (15,260 miles, including 4,840 kilo-

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meters—3,007 miles—subject to the jurisdiction of the States) of railway in the Republic.

Most of these railways in Mexico have obtained subsidies from the Government, ranging from $6,000 to $10,000 per kilometer (kilometer = 0.621 mile) according to the difficulty of the work, and these subsidies have contributed largely to the prosperity of the roads, as the proceeds have been used not only to build the line but also to pay, in some cases, the interest on the bonds.

The policy of the Mexican Government toward railroad construction and the management of the lines in the Republic had been from the beginning one of encouragement of private interests. Foreign capital had been largely instrumental in extending and developing this industry, and the benefit to the country at large has been of remarkable value. Early in the twentieth century, however, the far-sighted genius of Minister Limantour (Minister of Finance) changed the relation of the Government to the railways, and made the association a more intimate and active one by the purchase, in 1903, of £1,000,000 of 4½ per cent Second Debenture Stock of the Interoceanic Railway. This purchase led soon afterwards to a further investment by the Mexican Government in railway stock, this time with the expressed object of exerting its particular interests both on the policy and routine management of the National Railroad Company, the corporation the stock of which was acquired by the Government. This action took place when Minister Limantour visited New York and Europe in 1903, and while in the former city, in May, concluded with Speyer and Company an arrangement whereby the Mexican Government became the owner of a block of shares of the Mexican National, which gave it a preponderating influence in the councils of that corporation.

The Government then acquired the following holdings:

Preferred shares	100,000
Second preference shares	93,439
Deferred shares	106,288
Total number of shares	299,727

This amount represented 47½ per cent of the total number of shares issued, which was 634,137, while to secure an absolute majority only 17,343 shares were lacking, which could easily be acquired at a slight outlay at any time.

These initial steps of the Mexican Government's policy toward the great trunk lines, and the attitude of the Government toward them and the transportation problems in general, are best explained by Minister Limantour in a speech which he delivered before the Chamber of Deputies on December 14, 1906, in asking the Legislature to pass the Enabling Act.

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"When, in the year 1903, the Government acquired a majority of stock of the Mexican National it was thought that it would not be necessary to take any further steps in that direction. But circumstances have changed to such an extent that the Executive has been led on, little by little, to the solution now presented to the Chambers. At that time the object had in view was to defeat a combination which, if it had been realized, would have jeopardized the country's interests and restricted the liberty of the public powers. Fortunately the object of the Government proved possible of realization in such manner that the combination to which I have referred, and which was no other than the projected merger of the Mexican National and the Mexican Central, was baulked, thanks to the purchase by the Government of a controlling interest in one of the corporations.

"The Federal Government did not think it would be necessary to continue along that course and, in fact, made various declarations to that effect, stating that the measures which it had taken were in reality measures of protection for the country; that the attitude which it would thenceforth assume would be passive and that it did not intend to meddle in railway management. This purpose, gentlemen, was adhered to for some time, and had it not been for unforeseen circumstances, the Government would assuredly have been satisfied with having secured the control of the Mexican National and would have done nothing toward securing a controlling interest in other railways. But the persons and firms interested in the Mexican Central were at that time in a peculiar situation, due in part to difficulties of a financial nature surrounding their property, and in part to the apprehension which they entertained that, with the Government a holder in the Mexican National, the interests of the two systems might in time come into collision, which, according to their view, would seriously affect the prospects of their property.

"It seems to me unnecessary to tell you that the Government has taken scrupulous care to do nothing that might be interpreted as an act of hostility to interests which, though at first sight they might seem rival interests, are not so in reality. It was not the Government's idea to regard the shares which it had bought as a source of profit. It had secured the control of the National for much more elevated ends, as you well know. But all this did not suffice to give the persons interested in other transportation systems the necessary confidence in their ability to expand their business without coming into conflict with the Mexican National.

"I have just alluded to the pecuniary difficulties in which the Mexican Central was involved. The fact is that the company in question had developed its system with considerable rapidity and some of its lines had cost a good deal of money to build and had not proved very profitable. Those lines naturally were a drag on the entire system to such an extent as to make it difficult for the company to meet its obligations. As the majority of the company's bonds mature in 1911, that is to say, four years hence, the directorate of the Central could not contemplate with

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indifference the approach of that date without making at least an effort to save the situation.

"On the other hand, you are familiar with the aspect offered by the transportation question in the neighboring nation. The problem there is only one phase of the trust question which may be characterized as a peril. Those great corporations are being extended every day, and many of them cover considerable areas of territory. The tendency to expansion has been so pronounced in recent years that it may be said that the aim of most of the financial interests controlling the great transportation systems of the United States is to absorb as many other lines as possible. The United States Government, alarmed by this tendency and desirous of initiating a reaction against it, has, as you well know, taken action which aims at combatting those organizations and checking their continued expansion. Under these circumstances it was natural that we, on our side, should endeavor to prevent the powerful corporations in question, attacked as they being, by all legal means in their own country as well as harassed by the pressure of public opinion, from coming hither and seeking to absorb those Mexican railways which are not already under the direct control of the Government.

"There was another reason. The railways of Mexico have been constructed not in accordance with any pre-determined plan, but in accordance with the requests made from time to time by concessionaires for permission to connect such and such regions with such and such others. Unity of conception has, therefore, been lacking in the location of our railways, which have been the creation of circumstances, of individual interests and of transient necessities. This lack of a uniform plan was bound to be attended with somewhat undesirable results, as far as the distribution of transportation facilities and the satisfaction of the country's general and local needs are concerned. Regions of considerable importance are not yet connected by rail with the rest of the country, whereas there are other regions which have not only one but two or three lines, paralleling one another and competing for a traffic which would barely be sufficient for one.

"As long as each of the railway corporations preserved its individual identity, the Government could not easily undertake to remedy this situation, but through a railway merger it will be possible to correct many evils, especially that of parallel lines. There are some lines naturally which offer greater advantages than others either in grade or curvature or by reason of the character of the territory which they serve. When traffic is handled by the cheapest route, the railways are able to earn greater profits and it is possible to grant reductions in rates, whereas if traffic has necessarily to be carried over a given route the operating company is perforce saddled with the higher cost of transportation. It is a very different thing, for example, to bring up freight to the Central Tableland from Tampico over the line connecting that port with San Luis Potosi, which has gradients of 4½ per cent, from bringing up that same freight over the line connecting Tampico with Monterrey on which

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the gradients are only 2 to 2¼ per cent. Such a difference in the matter of railway operation is of considerable moment, gentlemen, and the economic 'routing' of freight can not be accomplished unless the lines involved are the property of a single corporation.

"It seems unnecessary to mention the other savings that can be effected when railway systems are the property of a single corporation instead of belonging to several.

"Thus, there are three main arguments for the incorporation of the two great systems—the National and the Central: *First,* to avoid friction between different corporations when the two are competing lines, or when one of them fears being antagonized by a concern in which the Government holds a controlling interest; *Second,* to avoid the absorption of properties, not controlled by the Government, by one of the great railway systems of the United States; and *Third,* the prospect of realizing considerable economies through the consolidation of all the great railways under a single management."

The policy of the Mexican Government, inaugurated thus formally in 1906, was logically carried out, and the beginning of 1909 witnessed the consummation of the idea in the merger of the lines and properties of the National Railroad Company of Mexico and the Mexican Central Railway Company in the nature of a new corporation having its headquarters in Mexico City, in which the Mexican Government has a controlling interest. The Government's absolute majority stockholding is as under:

SHARES CONSTITUTING THE CAPITAL STOCK.

	Authorized Issue	
First preferred shares	60,000,000.00	*pesos*
Second preferred shares	250,000,000.00	"
Common shares	150,000,000.00	"
Total	460,000,000.00	*pesos*
Of this amount the Government owns:		
First preferred shares received in exchange for First preferred shares of the National Railroad of Mexico	20,000,000.00	*pesos*
Second preferred shares received in exchange for Second preferred shares of the National Railroad of Mexico, at the rate of 110 of the former for 100 of the latter	20,556,580.00	"
Second preferred shares received in exchange for Mexican Central shares	40,000,000.00	"
Common shares received in exchange for deferred shares of the National Railroad of Mexico	21,988,000.00	"
Common shares received as part compensation for the Government's guarantee	127,460,000.00	"
Total of shares belonging to the Nation	230,004,580.00	*pesos*

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This forms a working majority of the stock of these two important railroad systems of the country, and with this commanding position the Government has instituted its program.

The 24,559 kilometers (15,260 miles) of railway in the Republic are best considered under the two great heads—the system owned and controlled by the Government, and the systems still owned and managed in the interests of the private management. The first division is comprehensively included in the corporation known as the National Railways of Mexico.

National Railways of Mexico (Ferrocarriles Nacionales de Mexico).

This company was incorporated by Presidential decree dated July 6, 1907. It was organized on March 28, 1908, under a law of the Congress of the United States of Mexico enacted December 26, 1906, and under the above decree of 1907. The duration of the corporation is 99 years from July 6, 1907. By this decree it is provided, among other things, as follows:

"Article 2. The object of the company shall be to take over and unite the properties of the National Railroad Company of Mexico and the Mexican Central Railway Company, Ltd., with powers to acquire, construct and operate any other railroad lines within the national territory, and to do, enter into and carry into effect every kind of act, transaction and contract relating to the purpose of the law of December 26, 1906; enjoying, in consequence, in order to accomplish the purposes of its constitution, the following powers and authorities:

"Section 1. To acquire, own and operate in whole or in part and by any legal title, the concessions, rights and properties of the National Railroad Company of Mexico and of the Mexican Central Railway Company, Ltd., and of any other company or undertaking which may own or operate lines of railway or of transportation by land or by water, or any service appurtenant to the same.

"Section 2. To acquire and own by any legal title, shares, whether preferred, ordinary, common or deferred, bonds or obligations, and, in general, securities of any class, of National Railroad Company of Mexico or of Mexican Central Railway Company, Ltd., or of the other companies or undertakings mentioned in the preceding section and whose properties shall be situated wholly or partly within the national territory; with power to exercise all the rights inherent in such shares, bonds or obligations and securities."

The principal office of this corporation is Calle de Vergara, No. 209, in the City of Mexico, and general offices are maintained at 25 Broad Street, New York City.

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MAIN OFFICE BUILDING OF THE NATIONAL RAILWAYS OF MEXICO, MEXICO CITY.

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The National Railways of Mexico (Ferrocarriles Nacionales de Mexico) owns by direct ownership the properties formerly known as the

Standard gauge.	Kilometers	Miles
Mexican Central Railway, main line and branches...	5,659	3,516
National Railroad of Mexico	1,960	1,218
Narrow gauge.		
Uruápan Division (National Railroad)	512	318
Michoacan & Pacific Railway (Leased)	92	57
Hidalgo and Northeastern Railway (National Lines)	244	152
Total	8,467	5,261
(N. B.—The decreased mileage, as compared with earlier reports, is due to accurate remeasurements.)		
Sidings and yards	1,022	635
Grand total	9,489	5.896

This corporation has possession of the Texas Mexican Railway, from Laredo Bridge to Corpus Christi, but as the property lies in Texas, it is not included within Mexican figures; the length of this line is 261 kilometers = 162 miles.

The National Railways of Mexico control*		
Standard gauge.		
Mexican International Railroad	1,476	917
Tehuantepec National Railway (Main line 190 miles, branches 30 miles)	354	220
Veracruz and Isthmus Railroad	425	264
Pan-American Railway	478	297
Narrow gauge.		
Interoceanic Railway	1,184	736
Mexican Southern Railway	454	282
Total	13,860	8,612

*The Mexican-Pacific Railway is now included in the Mexican Central Railway statement above, as part of the section between Guadalajara to Colima.

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INDEPENDENT RAILROADS.

Among the larger companies operating railways in the Republic the following deserve mention:

	Kilometers.	Miles.
Mexican Railway (standard gauge)	547	340
Kansas City, Mexico and Orient (standard gauge)	444	276
Mexican Northern Railway (standard gauge)	130	81
Mexican North Western R. R. (standard gauge)	589	366
Controlling the Chihuahua and Pacific Railroad, and the Sierra Madre and Pacific R. R. and Rio Grande, Sierra Madre R. R.		
Parral and Durango Railway (standard 57 miles, narrow 8 miles)	105	65
Potosi and Rio Verde Railway (narrow)	64	40
Southern Pacific Railroad of Mexico (standard)	1,923	1,195
Controlling the Sonora Railroad, and the Cananea, Yaqui River and Pacific R. R.		
Veracruz Railways (narrow)	72	45
United Railways of Yucatan (standard 103 kilometers, narrow 707 kilometers)	810	503
Total	4,684	2,911
To these larger lines must be added many miles of smaller and local roads that are used in mines, or are under State jurisdiction, as well as sidings, very recent extensions and certain extensions of electric traction, amounting altogether to	6,015	3,737
The lines controlled directly by the Government have been shown to amount to	13,860	8,612
Grand total	24,559	15,260

As the railways already named are of decided interest in the study of the development of Mexico, a slight history and description of each is appended.

The Mexican Central Railway (*El Ferrocarril Central Mexicano*) is the result of the amalgamation of different government concessions. The first one granted was in 1874 for the construction of a line from the Capital to Leon via Querétaro, Celaya, Salamanca, Irapuato, Guanajuato and Silao. By a decree of April 3, 1880, the Government transferred this concession to a Mr. Robert Symon, an Englishman, who had interested capitalists in Boston, Massachusetts. The road had already been incorporated in that State on February 25, 1880, and the above

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name was adopted. In 1881 the concession was granted, by the State of Chihuahua, for extension to Paso del Norte on the Texas frontier. The entire main line was opened for operation from the City of Mexico to El Paso, Texas, April 2, 1884. Other lines and concessions were gradually acquired, such as that from Aguascalientes to San Luis Potosi and Tampico, the Coahuila and Pacific Railroad, the Mexican Pacific Railway, the extension from Saltillo to Paredon, and the Guadalajara branch, from Irapuato to Ameca. A final statement as to Government aid received by the Mexican Central Railway under concessions granted it shows that it amounted to some $25,500,000, not including subventions on properties acquired by purchase, the national subsidy on the main line having been $15,200 per mile ($9,000 per kilometer). On February 1, 1909, the properties of the Mexican Central Railway Co., Ltd., were taken over by the merger company, the National Railways of Mexico. The main line extends from Mexico City to (Paso del Norte) Ciudad Juarez, opposite El Paso, Texas, and the important branches are those to Tampico, to Monterrey, to Cuernavaca, and to Guadalajara, recently extended through Colima to the Pacific port of Manzanillo.

The National Railroad Company of Mexico (*Ferrocarril Nacional de Mexico*) was based on a concession granted by the Government on September 13, 1880. The plan was to construct, somewhat as a competitor to the Central system, a narrow gauge railroad between Mexico City and the northern frontier, more direct than the earlier line, with probable extension to the port of Manzanillo on the Pacific Ocean. Under this contract the railway company received from the Government a subvention of $7,000 per kilometer (about $4,375 per mile) for the line north of Acámbaro, and concessions ranging from $7,000 to $8,000 per kilometer ($4,375 to $5,000 per mile). A newer contract placed all construction of a uniform basis of $7,000 per kilometer ($4,375 per mile) guaranteed by certain customs receipts. After various modifications in the plans and some delays in the work the last spike was driven in the completion of the trunk line between Mexico City and Laredo, September 29, 1888, and definite passenger and freight service were established on November 1st of the same year. This road was originally narrow gauge, but in 1901 the work of changing this to standard gauge was begun, and completed in 1903, improvements of many kinds being introduced at the same time. The new through service on standard gauge was inaugurated November 8, 1903. In 1903 also the Government became the owner of a block of shares of the Mexican National, and on January 1, 1909, the properties of the National Railroad Company were taken over by the merger company, the National Railways of Mexico. The main line

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extends from the City of Mexico through Acámbaro, San Luis Potosi, Saltillo, Monterrey, to Nuevo Laredo, opposite Laredo in Texas. The important branches are those from Monterrey to Matamoros, in the State of Tamaulipas, opposite Brownsville, Texas, near the mouth of the Rio Grande (the Texas-Mexican, in the State of Texas, from Laredo to Corpus Christi), the Interoceanic Railway (see below), the narrow gauge Uruapan (State of Michoacan) division (see table on page 198). Lines leased and controlled by this system are the narrow gauge Hidalgo and Northeastern Railway from Mexico to Beristain, State of Hidalgo, and the Michoacan and Pacific Railway, also narrow gauge, from the station Maravatío to Zitacuaro, State of Michoacan.

The Interoceanic Railway (*Ferrocarril Interoceanico*) is the result of a concession to build a road via the City of Mexico to connect Veracruz on the Gulf of Mexico and Acapulco on the Pacific Ocean. The original dates from April, 1878, but a revised concession was granted February 13, 1883. The main line (narrow gauge) extends from Veracruz to the City of Mexico through Jalapa, with an important branch to the city of Puebla, once on the main line. Other branches are the Morelos Division, Los Reyes to Puente de Ixtla (State of Morelos); Matamoros Division, Los Arcos to Cuautla (State of Morelos); Atencingo to Tlancualpican (State of Puebla). The Interoceanic Railway controls also the Mexican Eastern Railway (*Ferrocarril Oriental Mexicano*), a working company with branches to Tezuitlan and San Nicolas (State of Puebla). The Mexican Southern Railway (*Ferrocarril Mexicano del Sur*) was taken over on January 1, 1910. It is proposed to convert the main line of the Interoceanic Railway between Veracruz and the City of Mexico to standard gauge.

The Mexican International Railroad Company (*Ferrocarril Internacional Mexicano*) was organized in the United States in 1882 to acquire concessions granted by the Mexican Government in 1881 and 1882 to construct and operate a line of railroad and telegraph between the City of Mexico and the Rio Grande at Ciudad Porfirio Diaz (formerly Piedras Negras), with the right to construct branches to the Gulf of Mexico at some point between Veracruz and Matamoros, and to the Pacific Ocean at some point near Mazatlan; in place of subsidies, the Government obligated itself not to grant a subvention to any other line within 25 miles on either side of the International. The concessionaire at the time was the late Collis P. Huntington, one of the constructors of the Southern Pacific in the United States. Connected with the International are small branches to the coal beds in Coahuila, where coal is mined and marketed in a commercial way. The property passed, on Mr. Huntington's death,

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into the control of the Mexican National, and in 1909 the necessary shares of the company were purchased from the Southern Pacific Company, so that the International system has now been incorporated into the National Railways of Mexico (*Ferrocarriles Nacionales de Mexico*). The main line extends from Ciudad Porfirio Diaz at the Texas frontier to Torreon, where it crosses the Mexican Central Railway, and then to Durango, capital of the State of the same name. There are important branches to Monterrey (State of Nuevo Leon), and to Tepehuanes, a rich mining district in the State of Durango.

A LADY OF TEHUANTEPEC.

The Indian women on the Isthmus of Tehuantepec are noted for their animation, good looks, and business acumen. The native costume is the huipil (a lace-like ornament over the head and down the back).

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The Tehuantepec National Railway (*Compañia del Ferrocarril Nacional de Tehuantepec*) is a company subject to the Mexican laws and domiciles in Mexico. Its aim is the management, assigned to it by the Government, of the Tehuantepec National Railway as also of the ports of Puerto Mexico (formerly Coatzacoalcos) and Salina Cruz connected with it, together with all plant and appurtenances floating, movable or immovable belonging to them. The Company, therefore, is an operating company, as the railroads, ports and all belonging to them are the property of the Government; it cannot purchase real estate for itself. The Company has the right and at times the obligation to establish shipping lines in the Pacific and Atlantic, and in the Gulf of Mexico for trading along the coasts of the Mexican Republic and to and from foreign ports. The working character of this company is a partnership between the Mexican Government and Messrs. S. Pearson & Son, Ltd., of London. Its activity is directed toward the management of the Tehuantepec Railway.

The passage of the Isthmus of Tehuantepec has been the ambition of all statesmen from Cortes to Diaz. The former projected it, the latter finished it. The colonial governments realized its importance, and surveys were made, the most noticeable being that of Cramer, in 1774, who advocated a canal in this region. Successive republican administrations gave attention to plans for creating a route here, some advocating a canal (in connection with the Coatzacoalcos River), others a combination of stage coach and navigation, or an ordinary railway, and the well-known engineer James B. Eads proposed a ship railway. Several concessions were granted—all insisting that the Government must own the line—one in 1878, that to Eads in 1881, although no work on the ship railway was done, others in 1882, 1888, and in 1892. Under Mr. Stanhope, one of the last concessionaires, a railroad across the Isthmus was completed, but it had been piecemeal work that needed reconstruction, and furthermore it was found that terminal ports, equipped for modern shipping, would have to be provided. The result was that in 1896 Congress authorized the Government to enter into a unique partnership with the firm of S. Pearson & Son for the development and exploitation of the Tehuantepec Railway and terminal ports. The first contracts were signed in 1898 and 1899, but the present agreement dates from 1902, with slight modifications approved in May, 1904. This contract of partnership is to last 51 years from July 1, 1902. The firm of S. Pearson & Son manage the corporate property, the working capital being $7,000,000, furnished in equal shares by the two partners, and the surplus earnings above operating expenses to be divided, with an increasing scale, beginning at 65%, to the Government.

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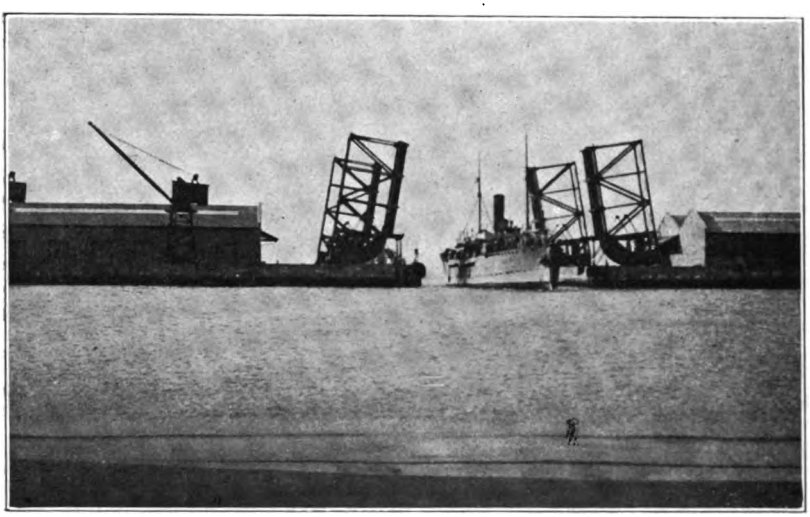
The Isthmus of Tehuantepec is situated in the States of Veracruz and Oaxaca. The shortest distance from ocean to ocean in a straight line is 125 miles (201 kilometers) over comparatively level ground, the highest point, at Chivela Pass, being only 730 feet (222½ meters). The main line of the Tehuantepec National Railway itself, from Puerto Mexico (Coatzacoalcos) to Salina Cruz, is 304 kilometers (189 miles), and there are branches to San Juan Evangelista to the north, and to Minatitlan on the Coatzacoalcos River, to the south. Modern docks and machinery are at both ports, the depth of the harbor at Salina Cruz being 10 meters (33 feet) and at Puerto Mexico 9 meters (30 feet). At Santa Lucrecia connection is made with the *Veracruz al Isthmo Railway* from the north, and at Gamboa with the Pan-American Railway from the south as far as the Guatemalan frontier. On January 1, 1907, President Diaz in person opened the Tehuantepec Railway to the commerce of the world.



THE DRAWBRIDGE AT SALINA CRUZ.

This device is operated by electricity. The entrance from the Pacific Ocean to the outer harbor is 600 feet, but to the inner harbor, through this bridge, the passage is only 90 feet, between solid masonry piers.

Veracruz and Isthmus Railroad Company (*Ferrocarril Veracruz al Isthmo*) was incorporated in 1898 as the Veracruz and Pacific Railway under the laws of the State of West Virginia, and work was pushed by the contractors, against great difficulties, up to 1904, when the company was taken over by the Mexi-

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can Government, under the laws of which the new company was formed the same year, and the existing lines brought absolutely under the Government's control. The main line runs from Cordoba, on the Mexican Railway, to Santa Lucrecia, on the Tehuantepec National, and a branch leaves the main line at Tierra Blanca, running in a general northern direction for 61 miles (98 kilometers) to Veracruz. A new branch line of 43 miles (71 kilometers) is under construction between Rives and San Andres Tuxla.

Pan American Railway (*Ferrocarril Pan Americano*) was incorporated in 1901 under laws of the State of New Jersey. It was completed on April 1, 1909. There is a branch line from Tonola, 21 kilometers (13 miles), to Puerto Arista, 21 kilometers (13 miles), in operation. The main division starts from Gamboa, on the Tehuantepec National Railway, and passes through the State of Chiapas to the frontier of Guatemala 457 kilometers (284 miles). After crossing the Suchiate River between the two Republics, connection will be made with the Guatemala Central Railway, thus forming one more link in the line covered by the general term Pan American Railway.

Mexican Southern Railway (*Ferrocarril Mexicano del Sur*) dates from a concession originally granted in 1886 to the then Governor of the State of Oaxaca, for the construction of a railway from the station of Tehuacan, in the State of Puebla, to the capital of the State of Oaxaca. In 1888 this was modified to the extent of authority to build from the city of Puebla to the city of Oaxaca, and to extend from the latter to the Isthmus of Tehuantepec. The road was built with English money, assisted by certain subsidies from the Mexican Government. The line was opened to Oaxaca in November, 1892, by President Diaz in person, who on that occasion availed himself of the opportunity of journeying for the first time by rail to his native city. On the reorganization of the company in 1905-1906 the Government obtained control of the road with the money paid in exchange for the subsidy bonds. A tramway system of 35 miles (56 kilometers) is worked in connection with the Mexican Southern Railway.

The Mexican Railway (*Ferrocarril Mexicano*) was incorporated in 1864, and is consequently the first railway organized and operated in the Republic. It is said that the Government, of that time, insisted that the clause of the concession be literally carried out; namely, that the road be constructed from the City of Mexico to Veracruz, thus necessitating the transport of material from the seaport to the interior before it could be used in building the line. The main division, formally inaugurated by President Sebastian Lerdo de Tejada on January 1, 1873, connects Mexico City with Veracruz, and parallels the old tradi-

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tional trail of the Indians and of Cortes from the coast to the plateau. It is one of the great scenic routes of the country, and in fact of the world.

Kansas City, Mexico and Orient Railway (*Ferrocarril de Kansas City, Mexico y Oriente*) was incorporated in 1900 under the laws of Kansas, and legalized in Mexico. It was formed to construct a line from Kansas City to Topolobampo Bay, Mexico, about 1,629 miles (2,782 kilometers), of which 899 miles (1,447 kilometers) are in operation, including leased track, but within the borders of Mexico, a distance of 634 miles (1,014 kilometers), there are as yet but 276 miles (444 kilometers) in this system. The Company receives a subsidy from the Government and from certain of the States. In Mexico the main line runs from Falomir, 63 miles (101 kilometers) from the frontier to the City of Chihuahua, thence south over the Chihuahua and Pacific Railway, operated under a lease, 120 miles (194 kilometers) to Miñaca, continuing to Sanchez on its own line; construction is proceeding southwest from this place, to connect with the section already in operation between Fuerte and Topolobampo (on the coast), a distance of 62 miles (100 kilometers). A very rich and productive section of the Republic will be served by this railway, and from the harbor of Topolobampo it is planned to establish ocean connections to many parts of the Pacific and the Far East.

Mexican Northern Railway (*Ferrocarril Mexicano del Norte*) was incorporated in 1890, under the laws of New York State, and has in operation a standard gauge road between Escalon, on the Mexican Central Railway, and Sierra Mojada, a mining camp in the State of Chihuahua, a distance of 81.35 miles (129 kilometers).

Mexico Northwestern Railroad Company (*Ferrocarril Noroeste de Mexico*) was incorporated in 1909 under the laws of the Dominion of Canada for the purpose of providing northern Mexico with railroad facilities, of acquiring and developing timber lands and carrying on a timber business, and to purchase the three following lines:

(1) Chihuahua and Pacific Railroad (*Ferrocarril Chihuahua al Pacifico*), incorporated in 1897 in New Jersey, and receiving a Mexican concession of 1891, built and finally leased the line between Chihuahua and Miñaca, with branches, now leased to the Kansas City, Mexico and Orient Railway (q. v.).

(2) Sierra Madre and Pacific Railroad (*Ferrocarril Sierra Madre y Pacifico*), which starts from Temosachic on the La Junta branch of the Chihuahua and Pacific, and terminates at Madera. It is chiefly a lumber line penetrating a densely wooded region.

(3) Rio Grande, Sierra Madre and Pacific Railroad (*Ferroca-*

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rril Rio Grande, Sierra Madre y Pacifico) was granted a concession in 1887 for the construction of various lines in Lower California and in the States of Sonora and Chihuahua, and another in 1896, to build from Ciudad Juarez, State of Chihuahua, to Corralitos, in the same State, from which point connection is made with the Sonora Railroad at Magdalena. This latter concession, from Corralitos to Magdalena, has been forfeited. The road is popularly known as the Corralitos Railway, and penetrates a country rich in agricultural, mineral and forestry resources.

Parral and Durango Railway (*Ferrocarril Parral y Durango*) was incorporated in Colorado in 1898, and uses a concession of the same year, for the construction of a railway from the mining camp of Minas Nuevas, Chihuahua, to the Lagunas de Juanota (State of Durango), but that portion of the system built and in operation consists of a main line 44 miles (70 kilometers) long from Minas Nuevas to Mesa de Sandia, in Durango, and a line from Rincon on the main line to Parral, 5 miles (8 kilometers), on a branch of the Mexican Central running to Jimenez, State of Chihuahua, on its main line.

Potosi and Rio Verde Railway (*Ferrocarril Potosi y Rio Verde*), a short road, acting under a New York charter and a special charter from the Mexican Government of 1898, is in operation to Ahuacatal, in the State of San Luis Potosi, from San Luis Potosi (city), a distance of 38 miles (60 kilometers). In the latter place connection is made with trains on the system of the National Railways of Mexico.

Southern Pacific Railroad of Mexico (*Ferrocarril Sud-Pacifico de Mexico*) is the name of the recent consolidation into a single system, in Mexico, with the exception of the Sonora Railway, of the lines controlled by the Southern Pacific system of the United States. The concession dates from 1905, and carries a subvention of 12,500 *pesos* per kilometer (20,116 *pesos* per mile). This company has virtually absorbed what has hitherto been called the Cananea, Yaqui River and Pacific Railroad, which has constructed lines from Nogales and Naco, on the Mexico-Arizona border, to Cananea, a copper producing center in the State of Sonora, and down the west coast of the Republic (on the Gulf of California) from the port of Guaymas to Mazatlan, and continuing toward Tepic, will ultimately reach that city, the capital of the Territory of the same name, and the city of Guadalajara, capital of the State of Jalisco, where connection is made with the National Railways of Mexico for the eastern and southern portions of the Republic. Regular through service is now given from the State of California to Yago. The Sonora Railroad (*Ferrocarril de Sonora*) is that portion of the Southern

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Pacific system in Mexico operated under lease from the Atchison, Topeka and Santa Fe Railway Company (dated 1898), from Nogales to Guaymas, in Sonora, a distance of 265 miles (427 kilometers). Several branches of the Southern Pacific Railroad Company of Mexico connect important places on both sides with the main line.

Veracruz (Mexico) Railways, Ltd. (*Ferrocarriles de Veracruz Mexico (Limitada)*, has an original concession which is dated 1875, modified by laws of 1878, 1888, 1900 and 1901. The principal line connects Veracruz and the town of Alvarado, 43 miles (70 kilometers) south of Veracruz, where connection is made with steamers plying on the interior rivers southward parallel to the coast, as far as San Juan Evangelista, 177 miles (224 kilometers) from Alvarado. At San Juan Evangelista a branch of the Tehuantepec National Railway—17 miles (28 kilometers)—runs to Juile. In this way a second route from Veracruz to the Isthmus is open.

United Railways of Yucatan (*Ferrocarriles Unidos de Yucatan*) is a system formed through a consolidation of lines formerly independent and all owned by hemp planters of the Peninsula of Yucatan. There are four divisions—the Northern, between Merida (the capital of Yucatan) and Progreso, its seaport, and between Merida and Izamal, all standard gauge; the Eastern, between Merida and Valladolid, with two branches, all narrow gauge; the Western, connecting Merida with Campeche, capital of the State of the same name, and two branches, all narrow gauge; and the Southern, between Merida and Peto, with one branch, narrow gauge.

Numerous short railway lines and connecting links in the Republic are not mentioned, since many of them are becoming absorbed in the great systems developing under modern conditions. The tramways, which are in Mexico classed as belonging to railways, are to be found in the descriptions of the cities in which they are operated, in the various States.

The Republic of Mexico can be approached at five principal points from the United States by established railway connections: at Matamoros, across the Rio Grande from Brownsville, Texas (by the international bridge recently opened); at Nuevo Laredo, opposite Laredo, Texas; at Ciudad Porfirio Diaz, opposite Eagle Pass, Texas; at Ciudad Juarez, opposite El Paso, Texas; and at Nogales, part of the larger city on both sides of the dividing line between Sonora and Arizona. Other points of contact with railway approaches exist, but they have not as yet been developed into through lines.

Across the southern border, from the Republic of Guatemala, an international bridge has recently been opened, across which connection is made to the interior of that country.

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Railway extension is one of the features of progress of Mexico, and new regions are opened each year. The more noticeable projects at this time (1911) are to continue the railway from the city of Oaxaca southward to meet the Tehuantepec National Railway near Salina Cruz, and to construct a line from some point on the Isthmus of Tehuantepec through the State of Tabasco and into Campeche, so as to bring these three States into rail communication with the capital—Mexico City. At present the State of Tabasco and the Territory of Quintana Roo have no railways.

The chief seaports of the Republic of Mexico are, on the east coast, naming them from north to south: Matamoros,* Tampico,* Veracruz,* Puerto Mexico (Coatzacoalcos)*, Frontera, Campeche,* Progreso,* and Xcalak (Territory of Quintana Roo). On the west coast, from north to south, Ensenada and Magdalena Bay (on the Pacific), Santa Rosalia and La Paz (both on the Gulf of California) on the peninsula of Lower (*Baja*) California; Guaymas*, Topolobampo*, Mazatlan*, San Blas*, Manzanillo*, Acapulco, Salina Cruz* and San Benito (Soconusco). Other harbors will be mentioned in the description of the individual States.

Steamships.

Steamship communication from ports on the east coast is maintained regularly. Coastwise service, under the Mexican flag, is carried on by the

Compañia Mexicana de Navigación, S. A., calling at all Mexican Gulf ports with four round trips a month. (Agency, Veracruz.) With foreign ports there are the following lines:

New York and Cuba Mail Steamship Company (Ward Line), from New York (via Havana to Progreso and Veracruz, or to Tampico direct), weekly sailings. Agency, in Mexico City, Calle Cinco de Mayo No. 16; in New York, Pier 14, East River.

Mexican-American Steamship Service (Wolvin Line), from Texas City, Texas, and from Galveston, Texas, to Tampico and Veracruz, and also to Puerto Mexico (Coatzacoalcos), sailings every ten days. Agencies, in Mexico City, Texas City, and New Orleans.

Atlantic and Mexican Gulf Steamship Company, from Mobile, New Orleans, Galveston to Veracruz, Puerto Mexico (Coatzacoalcos), and Progreso. Monthly (freight) sailings. Agency, general, 92 Beaver Street, New York.

Royal Mail Steam Packet Company, from Southampton (England) via Spanish ports and Havana, to Veracruz, and from Antwerp (Belgium), cargo steamers to Tampico and Puerto

*These have railway connections with the interior.

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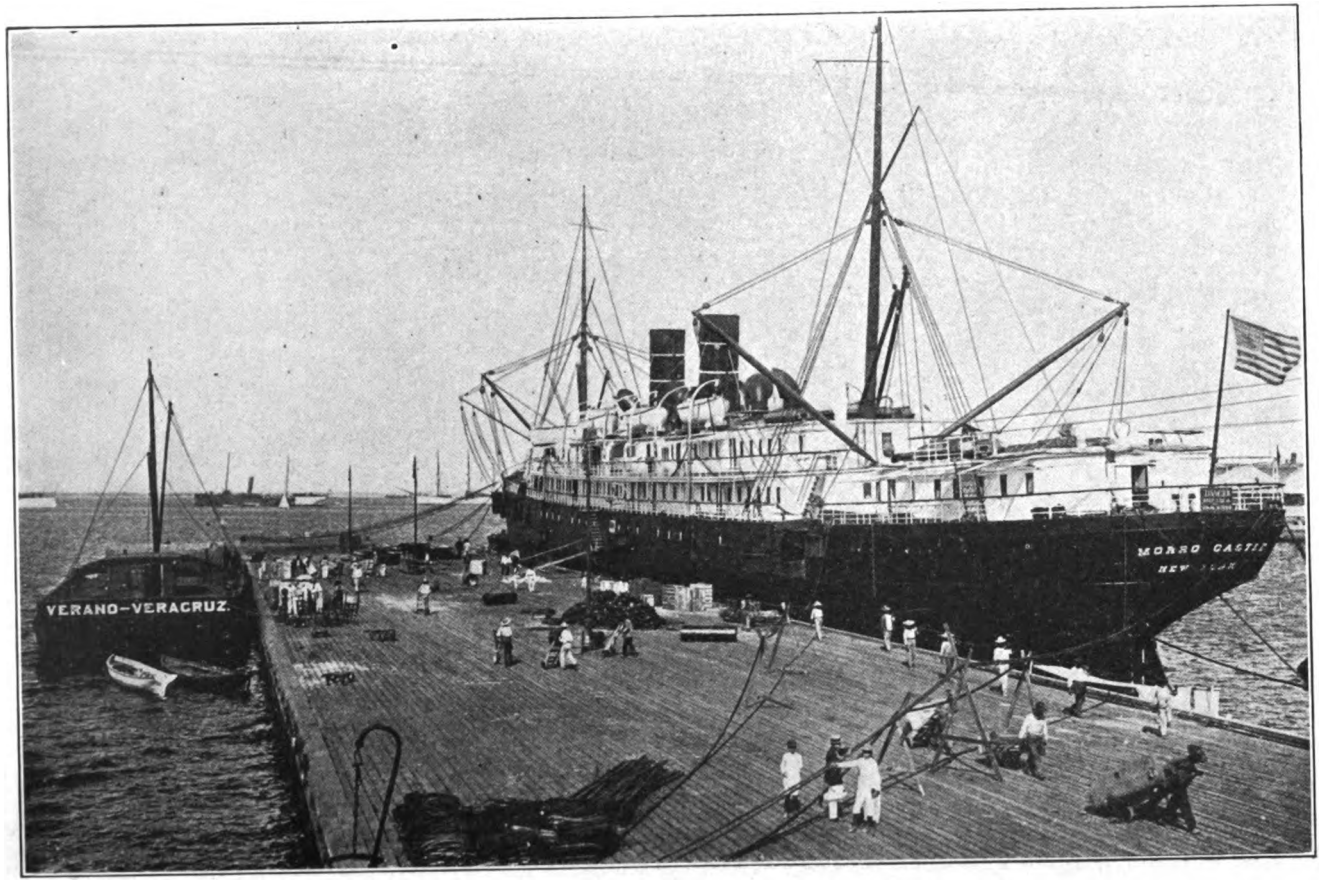

Fiscal Pier, Port of Veracruz.

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Mexico (Coatzacoalcos). Monthly sailings. Agencies, New York, 22 State Street; Mexico City, la Calle San Juan de Letran No. 5; Veracruz, Avenida Morelos, No. 7.

Hamburg-American Line, from Hamburg, via Havre, Southampton and ports in Spain, and Havana to Tampico, Veracruz and Puerto Mexico (Coatzacoalcos); with freight service from Hamburg via Antwerp (Belgium). Sailings every two weeks. Agencies, New York, 45 Broadway; Mexico City, 2a Calle de Tacuba; and in Veracruz, Tampico and Puerto Mexico.

Compagnie Générale Transatlantique, from Saint-Nazarre (France) via Coruña, Santander and Havana to Veracruz. Monthly sailings, with freight service to Tampico and Puerto Mexico. Agencies, New York, Calle de Gante No. 11, City of Mexico, and at Veracruz and Tampico.

Compañia Transatlantica de Barcelona, from (Genoa, Italy) Barcelona and Cadiz, Spain, calling at New York and Havana; another service from Bilbao, Spain, calling at Santander, Coruña and Havana. Monthly sailings to Veracruz, Puerto Mexico and Tampico. Agencies, Pier 8, East River, New York; at Veracruz, Puerto Mexico and Tampico.

The Cuban Steamship Company, from London via Bermuda, and from Antwerp via Havana, returning to Europe via Galveston, Texas. Monthly sailings. Head office in London. Agencies, Veracruz, Puerto Mexico and Tampico, and la Calle San Juan de Letran No. 5, City of Mexico.

Harrison Line, Leyland Line, from Liverpool (with a monthly steamer from Glasgow) via New Orleans (on return trip). Bimonthly sailings. Agencies, Cinco de Mayo No. 16, City of Mexico; and at Veracruz, Tampico and Puerto Mexico.

Norway-Mexico Gulf Line, from Christiania, Norway, a monthly service to Veracruz, Tampico and Puerto Mexico, returning via Galveston. Agencies, Cinco de Mayo No. 16, City of Mexico; and at Veracruz, Tampico and Puerto Mexico.

Elder-Dempster Line, of Liverpool (also called Canadian Line), from Montreal, Canada (from Halifax in winter), monthly sailings. Agencies, Calle San Juan de Letran No. 5, City of Mexico; and at Veracruz, Tampico and Puerto Mexico.

The steamers of these companies are equipped for passenger accommodation, although not all of them are on such a regular schedule as to insure definite arrival or departure from these ports. Regular weekly sailings are also maintained by American-Hawaiian Steamship Company (Tehuantepec Route) between New York (or Philadelphia) and Puerto Mexico, connecting with steamers at Salina Cruz for the west coast and the Far East. This is a freight line only, but occasionally carries passengers.

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Steamship communication from ports on the west coast is maintained regularly. Coastwise service, under the Mexican flag, is carried on by the

Compañia Naviera del Pacifico, with a fleet of coasting steamers plying at frequent intervals between national ports. It is subsidized by the Government. Agencies, head office Mazatlan, State of Sinaloa, Mexico; and at Guaymas, Salina Cruz and other ports on the Pacific coast, as well as at 3a Calle de Santa Teresa, City of Mexico.

With foreign ports there are the following lines of communication:

Pacific Mail Steamship Company, from San Francisco to Mazatlan, San Blas, Manzanillo, Acapulco, Salina Cruz, and San Benito, continuing to Panama, and returning over the same route. Sailings regularly every ten days, but on some of the trips certain ports are omitted. Main office, San Francisco, with agencies in all ports, and Calle Cinco de Mayo 6-B, City of Mexico.

Pacific Coast Steamship Company, from San Francisco to ports in Lower California, and to Guaymas and Mazatlan. Monthly sailings. Main office San Francisco, California, with agencies in ports of North Mexico.

Kosmos Line, from Hamburg, London and Havre, calls at Mexican ports to and from San Francisco, and touches at west coast ports of Central and South America also. Agencies at all ports, as well as Calle Gante No. 11, City of Mexico.

Canadian Mexican Pacific Line, of Vancouver, from Vancouver via Mexican ports, to Salina Cruz, with monthly sailings. Agency, Vancouver, Canada.

Toyo Kisen Kaisha (Japanese Steamship Company), from Tokyo, Japan and Chinese ports, to Manzanillo, Salina Cruz, continuing to Callao, Iquiqui and Valparaiso, in South America. Agencies, Salina Cruz and San Francisco.

Salvador Railway Company, Steamship Service, from Salina Cruz, has five services: 1, every six days to Ocos, Champerico and San José, in Guatemala; 2, every ten days to Acajutla, Salvador; 3, every twelve days to La Libertad and La Union, Salvador; 4, every twenty-one days to El Triunfo, Salvador, to Amapala, Honduras, and to Corinto, Nicaragua; 5, every ten days to San Benito, Mexico. Agencies, the Salvador Railway Company, Ltd., San Salvador, Republic of Salvador, Central America; and at Salina Cruz, Mexico.

American-Hawaiian Steamship Company (Tehuantepec Route), between Salina Cruz, every six days to California, every twelve days to Portland, Puget Sound and Honolulu. This company is under the same operation as that on the north terminus of the Tehuantepec National Railway.

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Besides these regular lines, numerous vessels enter and leave the principal Mexican ports for cargoes. As a rule they carry no passengers and the date of arrival or departure can not be given in advance.

Navigation on the interior waterways is carried on by steamers of light draught. Some of them have fixed schedules and conduct a heavy traffic, but information about them is best secured from local agents, as the itineraries are subject to modification through weather and business influences.

Post and Telegraph.*

The Mexican Government has spared no effort to add in every way possible to the efficiency of the postal and telegraph service of the Republic, and at times this has been a very arduous task. In 1885 the Government was confronted with a large disproportion between the receipts and expenditures in the service, being indebted in large amounts to publishers of periodicals,† mail contractors, and to nations with which Mexico had accounts connected with the transport of mail matter. These debts have now all been paid and the service is to-day in a flourishing condition, paying at least its own expenses.

Prior to 1877 there were throughout the Republic but 53 central and 269 branch post offices; in 1877 the number had risen to 313 and 685 respectively; in 1894 to 483 and 974; in 1895 to 475 and 974; in 1900 to 635 administration offices, 22 branch stations and 1,315 agencies; in 1905 the total number of post offices had increased to 2,402, and in 1910 to 2,843 post offices of different kinds in the Republic.

During the fiscal year ending June 30, 1895, the number of pieces carried in the post office of the Republic was only 24,773,636; in 1900 this had increased to 134,631,009; in 1905 to 178,357,805; and in 1910 the total movement for the fiscal year was 202,000,000.

In the matter of national and international postal money orders the same growth prevailed. In 1895 the number of those issued was only 23,972, all for internal use, as an international exchange had not been reported; in 1900 there were 566,364 national and 11,213 international orders, with a total revenue to the Government of 146,087 *pesos;* in 1905 the number of national orders was 1,147,475, of a value of 44,949,983 *pesos,* producing a revenue of 291,842 *pesos;* and of international orders 40,399, of a value of 1,054,034 *pesos,* producing a revenue of

*Post Office abbreviations are given in Appendix, page 333.

†Under the Mexican regulations of that date postmasters acted as collectors of subscriptions and advertising bills, etc., due the publishers of newspapers.

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THE GENERAL POST OFFICE, MEXICO CITY.

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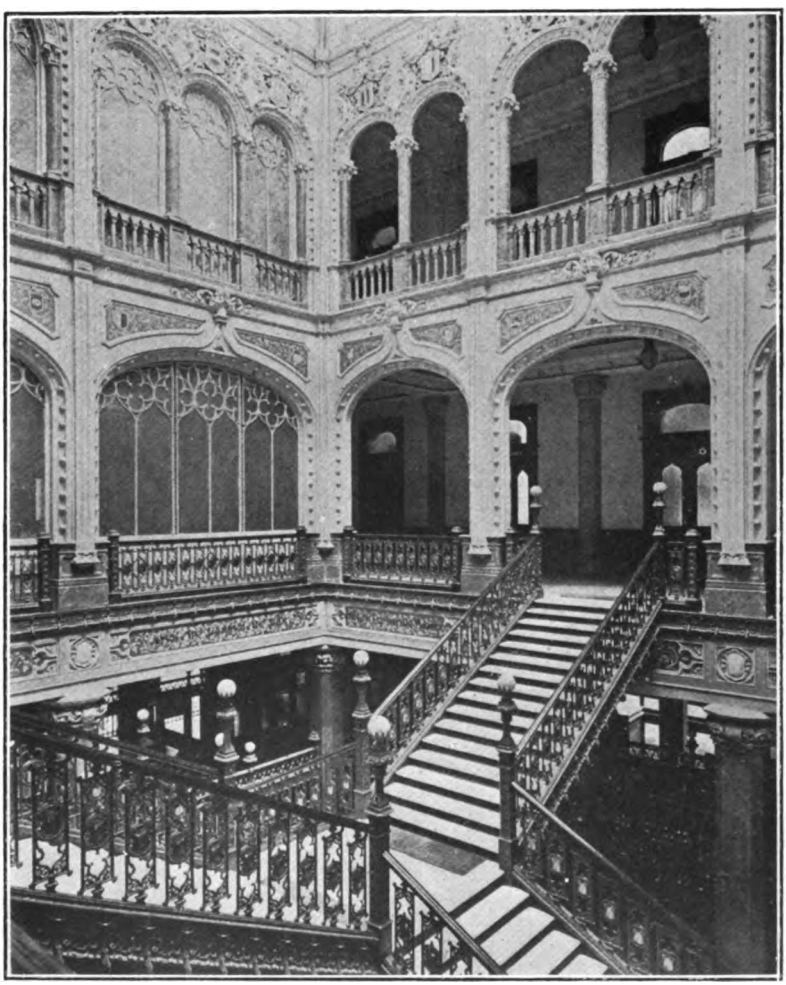
8,054 *pesos*. Since that date this branch of the post office has steadily increased its activity.

The total revenue derived from the post office in 1900 was 2,009,326 *pesos;* in 1905, 3,450,732 *pesos;* and in 1911, basing it upon the revenue of 1910, it will be 4,650,000 *pesos*.

The post office in Mexico is under the jurisdiction of the Department of Communications and Public Works. The Postmaster General is therefore a subordinate of the Minister of Communications and Public Works, who holds a Cabinet position.



GRAND STAIRWAY OF THE GENERAL POST OFFICE, MEXICO CITY.

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(The title in Spanish by which official communications should be headed is *Señor Director General de Correos,* Mexico (D. F.), Mexico.) Postal affairs in general in Mexico are subject to the provisions of the Postal Code of 1894, the Rules of Practice of August 1, 1895, and subsequent rulings.

In international postal relations Mexico adjusts her methods and rules to the various conventions of the Universal Postal Union, which the Republic joined in 1879, and to the special conventions into which she has entered with various foreign countries, relating principally to the postal money order service and the parcels post.

Post offices (*oficinas de correo*) are to be found in most towns of the Republic. The larger cities have branches (*sucursales*). Street boxes (*buzones*) for the mail are usually red, and are thereby distinguished from the telegraph boxes, painted blue. P. O. Box is, in Spanish, *Apartado.*

Postal rates, for *national* service, are regulated by the class into which articles fall.

First-class—Personal correspondence, and objects forwarded in a closed envelope or wrapper.

Second-class—Newspapers and periodicals, school books of primary instruction and works of art.

Third-class—Printed matter not comprised in the second-class, and business papers.

Fourth-class—Samples of no commercial value.

Fifth-class—Postal parcels containing merchandise.

	Inland service.	Urban service.
On first-class matter, letters, etc., of which the correspondence can not be examined.....	5 *centavos*	2 *centavos*
The limit of weight for matter of this class is 5 kilograms (11 pounds), and the maximum dimensions are 20 by 10 by 5 centimeters (8 by 4 by 2 inches).....	2 "	1 "
On second class matter, newspapers, periodicals, etc., for every 500 grams or fraction (17½ oz.)	2 "	2 "
On third class matter, ordinary printed material and business papers, for every 100 grams (3½ oz.) the limit of weight being the same as for letters	1 "	1 "
On fourth class matter, for every 100 grams or fraction (3½ oz.), maximum weight 300 grams (10½ oz.); maximum dimensions, 30 by 20 by 10 centimeters (12 by 8 by 4 inches)	1 "	1 "
On fifth class matter, parcels, for each parcel not exceeding 500 grams (17½ oz.) in weight	12 "	12 "
For every 500 grams in excess, up to five kilograms (17½ oz. to 11 pounds)	12 "	12 "

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Other restrictions and regulations govern the distribution of postal matter within the Republic, but it should be added that the service is well administered, speedy and safe. All five classes, in the interior, may be registered, but second-class matter then becomes third-class. The registration fee is 10 *centavos,* in addition to the regular postage, with additional fee of 5 *centavos* for acknowledgment of delivery. Such articles may also be sent C. O. D. for an amount not exceeding 100 *pesos,* on additional payment of 10 *centavos.* This C. O. D. collection must be made as an ordinary postal money order.

Postal rates, for *international* service, are payable according to the classification into letters, post-cards, post-cards with answer prepaid, printed matter, commercial papers, and samples. To foreign countries (with the exception to the United States, Canada and Cuba) the rate is 10 *centavos* for each 20 grams (0.70 oz.) or fraction, the maximum weight being 2 kilograms (4.4 pounds). For simple post-cards it is 4 *centavos.* Printed matter pays 2 *centavos* for every 50 grams (1½ oz.) with maximum weight of 2 kilograms (4.40 pounds). Commercial papers, that is, all documents not having the character of personal correspondence, pay 10 *centavos* for 250 grams (8½ oz.), adding 2 *centavos* for each 50 grams (1.7 oz.) up to 2 kilograms (4.4 pounds). Samples must be without commercial value, with maximum weight of 350 grams (123 oz.) and minimum payment for 100 grams (3½ oz.) of 4 *centavos.*

All forms of mail matter for abroad may be registered, if properly addressed, by additional payment of 10 *centavos.*

The postal rates to the United States, its possessions and the Canal Zone, Canada and Cuba, are in general the same as those within the Republic of Mexico itself.

Parcels Post Conventions.

Mexico has conventions for the reciprocal handling of postal parcels with the United States (concluded April 28, 1888), Great Britain (February 15, 1889, February 25, 1897, and December 1, 1908), Germany (May 24, 1892, and January 28, 1908), France (December 10, 1891, May 28, 1907, and July 6, 1907), Cuba (April 30, 1904), El Salvador (October 12, 1906), Canada (May, 1909), Nicaragua (October 11, 1907), and the Danish West Indies (May 26, 1909).

In general, the weight fixed is a maximum of 5 kilograms (11 pounds), with prepaid postage at the rate of 12 *centavos* for each 460 grams (1 pound). Different regulations of a minor degree apply to each country, and the person remitting a parcel

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is advised to consult the post office official in regard to each parcel. All countries to reserve the right to collect an additional fee for internal delivery.

Postal Money Orders.

The Mexican Post Office conducts a system of interior postal money orders, and has conventions for the regular exchange of money orders with the following countries: United States (Convention concluded in September, 1899, and amended Convention signed at Washington on February 2, 1909, and in Mexico March 8, 1909); Great Britain (March 18, 1904); Germany (March 7, 1905); France (May 10, 1905); El Salvador (October 30, 1905); Italy (February 13, 1906); Canada (May 15, 1906); and Austria-Hungary (signed at Vienna January 16, 1909, and in Mexico March 6, 1909).

The maximum of ordinary *interior* money orders is 100 *pesos,* but orders may be drawn for larger sums with permission of the Department of Communications. The cost of an order is 10 *centavos* for the first 10 *pesos,* and 5 *centavos* for every 10 *pesos* or fraction above that amount.

Foreign money orders are issued in accordance with the convention of the particular country. Between Mexico and the United States (the Canal Zone and the Philippine Islands to be reached through the Post Office Department of the United States as intermediary), the maximum amount for a single order is $100.00 (gold), 2 *pesos* Mexican being taken as an exchange equivalent for one dollar gold. The cost is in most cases that for interior money order.

Between Mexico and Great Britain (and Ireland) the maximum is 200 *pesos* or £20.

Between Mexico and Germany, 200 *pesos* or 400 *marks.*

Between Mexico and France, 200 *pesos* or 500 *francs.*

Between Mexico and El Salvador, 200 *pesos* or $100.00 (United States money).

Between Mexico and Italy, 200 *pesos* or 500 *lire.*

Between Mexico and Canada, $100 gold, or equivalent in Mexican money.

Between Mexico and Austria-Hungary, 200 *pesos* or 500 *francs* (in which the Austrian money order is payable).

Under Mexico's conventions with Great Britain and Germany, through the postal administrations of these two countries, money orders can be drawn by Mexico on almost all foreign countries, as well as on British and German possessions, and vice versa.

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In the postal service of Mexico certain articles can not be carried:

(1) Uncancelled postage stamps of current issues.
(2) Bank-notes, cheques and other documents payable to bearer.
(3) Jewels and precious stones.
(4) Coins of all kinds, except sample collections of Mexican coins.
(5) Precious metals.
(6) Live animals, except bees.
(7) Dead animals, if not stuffed.
(8) Fruits and vegetables subject to decomposition.
(9) Explosives and inflammable substances.
(10) Foreign lottery tickets.
(11) Obscene or immoral literature.
(12) Articles constituting a danger to postal employees.
(13) Articles liable to soil other correspondence, or to be offensive to smell.

Telegraph and Cable Lines.

The interior telegraph service is on the same footing as the Post Office in that it is a Government monopoly. The railway companies have telegraph lines, but they are exclusively for the use of the roads, and are available only for passengers telegraphing en route. The telegraph lines of the railways are not allowed to handle a general commercial business.

The Federal System, like the Post Office, is subject to the jurisdiction of the Department of Communications and Public Works. Some of the State Governments own telegraph lines within their State boundaries, and occasionally the Federal Government takes over such lines under a lease; occasionally also the Federal Government leases portions of its lines to a State Government.

In addition to its aerial lines, the Federal Government owns a submarine cable, 735 kilometers (457 miles) in length, from Veracruz to Frontera and from Frontera to Campeche, in the Gulf of Mexico; two shorter submarine cables, one from Jicanalgo to Ciudad del Carmen, 4.78 kilometers (3 miles) and the other from Ciudad del Carmen to Isla Aguada, 4.86 kilometers (3 miles); subfluvial lines aggregating 18.37 kilometers (11½ miles); subterranean lines totaling 6.89 kilometers (10 miles); and three wireless (Telefunken system, Berlin) installations, one furnishing communication between Cape Haro, near Guaymas, Sonora, and Santa Rosalia, Lower California, across the Gulf of California, 160 kilometers (100 miles); another between Mazatlan, Sinaloa, and San Jose del Cabo, Lower California,

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FEDERAL POST AND TELEGRAPH OFFICE BUILDING, PORT OF VERACRUZ.

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320 kilometers (199 miles); and the third, a short line, between Payo Obispo and Xcalak, Territory of Quintana Roo.

The Republic of Mexico, in common with the principal European and South American countries, has a system of government telegraphs which furnishes good service at very moderate rates—the government's purpose being to supply telegraphic facilities to the people at cost. The rates are extremely low; a 10-word telegram can be sent from one end of the country to the other for only 1 *peso;* and for shorter distances the rates are proportionately less. Night telegrams are accepted for transmission between 10 P. M. and midnight at one-half the day rates.

Standard Morse instruments are used, also the regular Morse alphabet, with a few changes necessary to adapt it to the Spanish language. The lines are built with both iron and wooden poles, and both glass and porcelain insulators are used. The wire chiefly employed in the construction of the lines is No. 8 galvanized iron telegraph wire.

In the Federal District, within which lies the capital, there is a cheap and convenient card-telegram service. Cards about the size and shape of postal cards are sold for 5 centavos (2½ cents United States currency) each, and have spaces for the address, a 10-word message, and the signature of the sender. Such a card, after being filled out, may be deposited in one of the numerous boxes that are placed similarly to letter boxes at street intersections and other important points and from which collections are made at short intervals. The cards thus collected are telegraphed from the nearest branch office to the branch which is in the district within which the addressee lives and from there delivery is made by the regular messengers. This card-telegram service is largely employed by the Mexican people for social as well as for business purposes.

The Federal telegraph system of Mexico is an extensive one. There are 491 telegraph offices in the Republic, with 23 telephone stations and 6 wireless telegraph stations. Nearly 4,500,000 telegrams were transmitted over the Federal lines during the fiscal year ended June 30, 1910, and these telegrams contained a total of over 70,000,000 words. The receipts from all sources during the year exceeded 2,000,000 *pesos.*

The Government maintains a school of telegraphy, the teachers of which are, in the main, officials of the Federal telegraphs. The course in this school is designed to impart a practical knowledge of telegraphy, but the general theory of electricity is also taught, together with other subjects such as arithmetic, algebra and geometry, adding to the general culture of the students. The young men who complete the course secure positions in the Federal telegraph service. The tuition in the tele-

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graph school is free, the Government's object being to supply trained telegraphers to its Department of Federal Telegraphs.

The Director-General of the Mexican telegraph system is under the Department of Communications and Public Works, above mentioned.

The following is a detailed statement of the system for the fiscal year ended June 30, 1910:

Number of offices:	
Equipped with Morse telegraph instruments	491
Equipped with radio-telegraphs	6
Equipped with telephones	23
Total	520
Length of lines:	Kilometers.
Extent of system	36,133
Total length of wires	74,254
Length of cables:	Meters.
Submarines	745,539
Subfluvial	17,548
Subterranean	7,489
Total	770,576
Volume of correspondence:	
Telegrams transmitted from July 1, 1909, to June 30, 1910	4,443,519
Words contained in the same	70,108,888
Telephonic messages transmitted for telegraph service	23,337
Words	328,982
Financial statement:	Mexican *pesos.*
Received from national correspondence	1,775,134.40
From international correspondence	292,977.35
From telegraphic orders	106,091.69
From other sources	51,443.03
Total	2,225,646.47

The number of employees of the Federal system is somewhat over 3,000.

The Federal telegraph system has a working arrangement with the Western Union Company in the United States, and through it handles messages to and from the United States and Europe.

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PART II.

Federal District, States and Territories.

Mexico is a Republic consisting of a Federation of 27 States, three Territories and a Federal District.

The legislature of each State exercises jurisdiction over all matters not entrusted by the Federal Constitution to the Federal Congress. This Congress, in addition to the legislation over which the Federation has exclusive jurisdiction, also enacts laws

San Francisco Avenue, Mexico City.

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for the Government of the Federal District and the Territory of Lower California. The Territory of Tepic is governed by the Codes of Jalisco, and the Territory of Quintana Roo is governed by the Codes of Yucatan. *Ayuntamientos* (Municipal Councils) enact local ordinances.

The Governor of each State administers the State laws. In each administrative division of the State resides a State official known as the *Jefe Político,* under the control of the State Governor, who performs both administrative and quasi-judicial functions. Most of the States maintain bodies of State police, under the control of the *Jefes Políticos* of the district. In cities and towns local ordinances are enforced by the President of the Municipal Council. In all towns of any importance municipal police are provided.

Each State has its district judge of the First Instance and a Supreme Court. The Government is represented in the Courts by an Attorney-General and by local public attorneys, whose functions extend not only to criminal cases but also, in certain instances, to civil cases.

Petty crimes and misdemeanors are dealt with by the Judges of the Peace. The Judges of the Civil Status have charge of the Civil Register, in which is recorded all acts and facts concerning births, guardianships, marriages and deaths. This register is in duplicate, one copy containing the original data and judicial acts and findings in the respective cases, and the other, copies thereof. Proof must be taken from the original book if possible, or in case of the loss, destruction or mutilation of the original, then from the duplicate register. If both are lost, facts regarding the civil status may be established by extrinsic evidence. These registers are the most authentic evidence of the civil status of residents in Mexico—both Mexicans and foreigners—and are kept by the judges under strict provisions as to their personal responsibility for errors.

Although each State has adopted its own Civil Code, that of the Federal District is of the greatest importance to foreigners because, first, their business is generally transacted in Mexico City, which is tributary to the Federal District; second, because the Civil Codes of all the States and of the Federal District provide that the parties to a transaction may select the place for its performance, and may submit themselves especially to the laws and tribunals of any jurisdiction, even when the transaction relates to real estate not located in that jurisdiction; and, third, because in most cases the Federal and the State Civil Codes are practically identical.

A Commercial Code, applicable to the whole Republic, has been adopted by the Federal Congress, under its general powers. This Commercial Code covers all transactions and questions arising in

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connection with commerce on land and sea, domestic or foreign, the organization and operation of the various kinds of commercial associations, partnerships and corporations, the business of warehousing, the making of loans, the purchase and sale of merchandise, the insurance business in all its branches, negotiable instruments, all the transactions included in the law merchant, transportation contracts, maritime commerce, and bankruptcy.

Certain taxes are payable in special stamps. This is in addition to the various operations on which stamp duties are paid (as enumerated in the Stamp Revenue Law), and for which the general issue of revenue stamps can be used. The following are the chief of these taxes:

Stamps of the Federal Contribution, paid throughout the States of the Federation, but not in the Federal District and Territories. It is the contribution of the various States to the expenses of the Federal Government. It is payable by a special stamp, and consists of 21 per cent of all taxes paid collected in State or municipal revenue offices.

Special stamps in which specific taxes are paid:

(a) Taxes on Mines and on Gold and Silver.
(b) Taxes on Cotton Yarn and Textiles.
(c) Taxes on Manufactured Tobacco.
(d) Taxes on Alcoholic Beverages.
(e) Interior Taxes on Dynamite and Explosives.
(f) Dues for Patents and Trade-Marks.
(g) Dues on Weights and Measures.

A description of each political subdivision of the Republic follows:

THE FEDERAL DISTRICT.

The Federal District (*Distrito Federal*) was formed by the law of November 18, 1824. Rules for its administration were enacted May 6, 1861, amended December 14, 1900, and its present political and administrative status is determined by the Organic Law of March 26, 1903.

Boundary, Area and Population.—On the north, east and west by the State of Mexico, on the south by the State of Morelos. Its area is 1,499 square kilometers (579 square miles). The population (1910) is 719,052, of which 339,341 are males and 379,711 are females.

The climate is moderately cool, agreeable and healthy, in spite of the fact that the thermometrical variations are numerous and extensive, in the different seasons.

No rivers of importance cross the District. Streams like the Consulado, Morelos, San Buenaventura, Tacubaya, San Angel, Tlalpan and La Piedad are called rivers, but some of them have water only during the rainy season. The Lake Xochimilco, and parts of Chalco and Texcoco, belong to the District. Mineral springs exist in Pocito, Guadalupe Hidalgo, Peñon and Horno.

The agricultural products are barley, chile, beans (*frijoles*), and peas, potatoes, wheat, together with fruits and woods of various kinds. Many flowers and edible vegetables (garden truck) are grown.

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The mineral products are insignificant, as the geological formation of the earth shows only traces of coal, and *tequezquite* near the lakes.

Railways within the District are numerous. In addition to the extensive system of urban and suburban traction lines, there are the Mexican Railway, to Veracruz; the Interoceanic (of the National Railways), also to Veracruz but through Jalapa; the Hidalgo, for Pachuca, Tulancingo and Tortugas; and the Mexican National (of the National Raiiways) for Laredo; the Central (National Railways) for Ciudad Juarez; and the National Railways for Cuernavaca and Balsas.

Mexican and Otomí are the native languages spoken by the Indians.

The Federal District is divided, for administrative purposes, into 13 Municipalities (about like a township in the United States), which contain 6 cities, 3 towns, 127 villages, 32 organized estates, and 73 hamlets.

These municipal divisions are: Mexico, Ixtacalco, Santa Fe, Xochimilco, Atzcapotzalco, Milpa Alta, Tacuya, Coyoacan, Mixcoac, Tacubaya, Guadalupe Hidalgo, San Angel, and Tlalpan.

The local affairs are administered by a Superior Governing Council of three officers, whose titles are Governor of the Federal District, President of the Superior Board of Health, and Director of Public Works, all appointed by the Federal Executive, but acting under the control of the Department of the Interior.

Each of the three officials is for the most part independent and alone responsible in his own department. This responsibility is limited by the right of the Superior Council—that is, of the three officials acting together—"to revise, confirming, reforming, or revoking the judgments of each one of the members of the Council, whenever these judgments are called in question." The other duties of the Superior Council are advisory merely. It may propose changes in the District law or administration, rules for the government and organization of officers and public services. It may suggest improvements in works of public utility, such as water supply, drainage, sanitation, opening or widening streets, or the creation of special commissions to study and report upon such matters. The Council has a general supervision of the making of contracts for public works, but all such contracts must be submitted for final approval to the higher authority.

The Governor of the District, the Director-General of Public Works, and the President of the Superior Health Board is each the head of his own department and responsible for its work, but the subordinate officers and employees are appointed by the Chief Executive of the Republic. The three heads must each be a Mexican citizen, more than 25 years old, and not an ecclesiastic.

The Governor of the District is the chief political authority in the District. He makes public, and enforces, all laws, decrees, and rules emanating from higher authority. He has special charge of the police and fire department, imposition of penalties for violation of ordinances, penal establishment, civic festivities, public diversions, plays, sale of intoxicating liquors, hotels and restaurants, street cars and cabs, the civil register, and of the inspection of weights and measures.

The Director-General of Public Works has special charge of the water supply, streets and roads, parks, monuments, municipal lighting, drainage and street cleaning, public buildings not under direct Federal control, cemeteries, construction, repair and maintenance of slaughterhouses and markets, inspection of building operations, and of woods, lands, commons, and other communal property.

The President of the Superior Board of Health has charge of all sanitary works as provided by the sanitary code, and, in addition, of general sanitary inspection, especially of the hygienic and sanitary con-

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"Coliseo Nuevo" Street, Mexico City.

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dition of slaughterhouses, markets, and cemeteries, and the introduction of meats from other sections.

The popular element in government is preserved in the Federal District through the preservation of the ayuntamientos or town councils. Each of the 13 municipalities into which the District is divided has its own ayuntamiento, composed of councilors elected by popular vote for four years. To be a councilor one must be a Mexican citizen, resident within the municipality, in full enjoyment of civil and political rights, more than 25 years of age, and not an ecclesiastic.

The ayuntamiento of the municipality of the city of Mexico is composed of 21 members, of Tacubaya 11, and of each of the other municipalities 7. Each ayuntamiento elects from among its members a president and a vice-president who hold office for two years.

The law requires that the ayuntamiento shall be consulted by the Ministry of the Interior, the Governor of the District, the director-general of public works, and the president of the health board, as the case may be, upon matters of general importance in the municipality, such as water supply and distribution, local sanitary work, establishment of new settlements, exploitation or sale of woods, lands, and commons. They must also be consulted as to contracts for the execution of any of these works and as to all other contracts of a municipal character having a duration of five years or more, or which call for a total expenditure of 100,000 *pesos* or more, or an annual expenditure of 25,000 *pesos*.

In all these matters the ayuntamientos have, by a two-thirds vote, the right of veto. The effect of this veto is to suspend for four months the project or contract in question. At the end of the four months if the ayuntamiento still opposes the proposition by a vote of three-fourths of its members, the matter is submitted to the President of the Republic for final solution.

The City of Mexico is the capital of the Federal District, and also the seat of the Federal Government. Its population is 470,659, of which 215,475 are males and 255,184 are females. This is probably the oldest city on the American continent, its authentic history dating back to the 12th century. The ancient Aztec metropolis of *Tenochtitlan* had for its center the great *teocalli* which was on or near the site now occupied by the cathedral—the mother church of New Spain. This giant pyramid, along with the Aztec city, was destroyed by the Spanish invaders, and the Indian temples were so massive that they gradually sank out of sight and now lie buried beneath the modern capital.

The first efforts to make a modern city were those of Maximilian and Carlota. The imperial pair beautified Chapultepec, they improved the Plaza Mayor (Zócalo), and showed that in Mexico there was the setting for one of the most beautiful cities in the world. Since the present era of peace the growth has been remarkable.

The superficial area of the present city is about 15 square miles (38.85 square kilometers), although that of the District is 579 square miles, eight times the size of the District of Columbia.

The Mexican capital is becoming one of the most beautiful cities of the world, but it is a city in process of being made over. Unlike Buenos Aires or Chicago, which are new, Mexico City is very old. The work of improvement is the work of tearing down and rebuilding. This work goes on constantly and always to fit in with a general large plan, which looks to the whole and not to the particular.

Situated in a valley, with mountains on all sides, the location is ideal. To the stranger the most beautiful construction in the City of Mexico is the Paseo de la Reforma, or the Paseo, as it is usually called. It extends, over two and a half miles in length, from the center of the residential part of the city to the foot of Chapultepec.

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16TH OF SEPTEMBER AVENUE, MEXICO CITY.

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The carriageway is broad, shaded by two rows of trees on each side, between which is a wide promenade. At intervals the Paseo expands into a *glorieta*, a small circular park 400 feet (122 meters) in diameter, around which are handsomely carved stone benches. In the center of the *glorietas* are well-kept and beautiful flower beds. In the first *glorieta* within the city stands the colossal equestrian statue of CHARLES IV of Spain, said to be the largest bronze in the world.

There are also colossal statues of Columbus and of Cuauhtemoc and Juarez. In fact, each *glorieta* will have several such statues of Mexican celebrities, which will be presented by the several Mexican States.

The statue of Charles IV was first placed in 1804 on its pedestal in the Plaza Mayor, where it remained until 1824, when it was removed to the patio of the university, whence it was moved to its present site. It is a solid bronze, 15 feet 9 inches (5 meters) high, weighing over 30 tons. The King is dressed in royal robes, wearing on his head a wreath of laurel and holding in his right hand the scepter. The horse is in the act of walking, the left fore foot and right hind foot being raised. The sculptor was MANUEL TOLSA.

The statue of Columbus was one of the first monuments erected on the continent he discovered, and one of the handsomest. He stands drawing aside the veil which concealed the New World. The base is ornamented by basso-relievos picturing incidents in the life of the Great Admiral, and at the four corners stand life-size figures in bronze of Padre Marchena of La Rabida, Padre Fray, Diego Dehesa, Fray Pedro de Gante, and Fray Bartoleme de las Casas.

The statue of Cuauhtemoc represents the plumed and feathered warrior standing upright in the act of drawing an arrow from his quiver.

The hill of Chapultepec overlooking the city is said to have been the site of the summer palace of the Montezumas. After the conquest the Spanish viceroys built on the crest of Chapultepec the great castle which stands to this day and is the summer residence of President Diaz. Surrounding the castle are magnificent cypress woods, the finest grove on the continent. The view from the terrace of the castle is one of the world's famous sights.

Another of the famous sights of Mexico is the Alameda, a park of about 40 acres. This was in old times an Indian market and also a place of execution. It was at one time inclosed by a high wooden fence, and later by a stone wall with a moat around the wall. Years ago the fences and walls were removed and the moat filled up. Since then the whole park has been made over, until it is now a most beautiful place of promenades. Here are held the *fiestas* on national holidays.

One of the most important, if not the most important, municipal work undertaken in the city of Mexico has been the drainage of the valley. This is a very old project and antedates the conquest in the colonial period. Work was at times pushed and then abandoned, and so it was during the earlier years of the Republic. Decisive action dates from the formation of the Drainage Board in 1886, since which time the work has been continuously and intelligently carried on to a final completion a few years ago. It comprehends an outlet from the low-lying valley to carry off the surplus water fall and drainage for which nature has not provided. The Valley of Mexico is a great undrained bowl set round with a rim of high hills and mountains. This rim has been tunneled and into the tunnel are carried the waters of the Viga Canal which is the final receptacle of the surplus water and city drainage. The drainage itself is by means of an underground system similar to that of most other modern cities. It differs in this that the natural fall being insufficient to carry off the matter or to flush the pipes by gravity, an artificial method of accomplishing these ends was necessary. This

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PLAZA DE GUARDIOLA, MEXICO CITY.

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THE CATHEDRAL IN MEXIÇO CITY.

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Illumination of the Cathedral in the City of Mexico, 16th of September, 1910.

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is done through a supplemental water supply derived from the springs surrounding the valley, which is gathered and pumped under pressure through the drain pipes, through the larger collecting channels into the canal, and through the tunnel out of the valley. The work begun by the Board in 1886 was continued by a Commisison appointed in 1895 and by the Board of Directors appointed in 1896, and completed in 1900. The opening of the new water supply for the city was one of the notable events of the Centennial Anniversary of Independence, and took place September 21, 1910. By this achievement about 400 liters (363 quarts) of water a day are available per capita for a population of 545,000.

The great cathedral of Mexico stands first in architectural interest among the many fine buildings which have given to the capital the name of "City of Palaces."

The corner stone was laid in 1573 upon the site occupied by the great Aztec temple which was destroyed by Cortes in 1521. A small church was two years later erected upon the site, which in turn gave place fifty years later to the foundations of the present cathedral. The walls were completed in 1615, the roof in 1623, when the first mass was said. In 1667 the church was dedicated, and in 1791 the towers were finished, and the building was finally completed about twenty years later.

The cathedral occupies an extent of 374 feet by 187 feet (114 meters by 57 meters). The architecture is composite. The façade on the side from which the towers rise is divided by massive buttresses into three divisions representing the three Greek orders. The lower is Doric, next above a somewhat exaggerated Ionic, and the upper part Corinthian. The material is a gray stone relieved by statues, friezes, bases, and capitals of white marble, which gives an agreeable color effect. The towers are 204 feet (62 meters) in height.

The National Palace occupies an entire square, fronting nearly 700 feet on the Plaza Mayor. It contains the President's offices and those of several executive departments, and is the meeting place of the Senate. The House of Deputies occupies a new building built especially for the purpose. The Palace occupies the site of the House of Cortes, which was destroyed in 1692. The present building was begun soon after, and has been added to from time to time. Over the main gateway of the Palace hangs the Liberty Bell of Mexico, rung by Hidalgo to call the people to arms in 1810. A modern home for the National Congress is at present under construction. This, when finished, will be one of the finest capitols of America.

The National Library was formerly the old Church of St. Augustin, and is one of the fine buildings of the city. It has gardens on each side and contains 200,000 volumes, of which many are very old and valuable.

The National Museum is one of the world's great museums. Its collection of ancient Mexican art and other relics is known to all scholars.

The School of Fine Arts is a fine gallery of painting and sculpture.

Among the most noted churches are San Pablo, Santa Vera Cruz, Santa María Martír, Santa Ana, Santa Cruz Acaltan, San Miguel, San José, Santo Domingo, San Augustin, San Diego, and Nuestra Señora de la Concepción.

Other fine buildings are the Mining Palace, the Post-Office building, Palace of Justice, and the Mint.

Mexico City is thoroughly cosmopolitan. Besides being the political, financial and commercial center of the Republic, it is also an important manufacturing place, and for all these reasons attracts to itself a large foreign colony. It is therefore celebrated for its gaiety, activity and for the completeness of the municipal advantages.

Electric trams circulate to all parts of the city; the system converges at the Plaza Mayor from which tracks radiate in every direction. There

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SPANISH CLUB, MEXICO CITY.

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are also good cabs of various grades, and numerous taxicabs at hotels, railway stations and at public stands.

Six railway stations provide for the great passenger travel which is a sign of modern Mexico. This is particularly active in the capital, because, with but few and relatively unimportant exceptions, it is at present necessary and always pleasanter to pass through the City in going from one part of the interior to another.

At least a dozen first class hotels are available for travelers, and in these, besides Spanish, English, German, and French are spoken. Many comfortable hotels of a second order are to be found, but they are patronized by those possessing an intimate knowledge of Spanish, even if that is not their native tongue. So great has been the tide of visitors of late years, however, that hotel accommodations are not equal to the demand, so that it is probable that within a short time Mexico City will have one or even more of the huge sky-scrapers for which New York and the large cities of the United States and Europe are famous.

Other conveniences of a metropolis, such as shops, banks, post and telegraph offices, theaters, clubs, parks and suburbs, are abundant, and of such excellence that Mexico City bears the distinction of being rather European than American in such characteristics.

The city is divided into several sections, partly distinguished by their geographic location, partly also by their historical relationship and association. At the center and toward the north and east are the older and more peculiarly Spanish and Mexican quarters, with most of the famous churches, public buildings and architectural landmarks. Toward the south and west are the newer quarters, the modern resident *colonias*, and the pleasure grounds of the people. Surrounding the city are numerous suburbs in which are modest settlements of the poorer classes, or the costly villas of the rich.

At the head of the educational system of the Republic, and therefore of the schools of the capital, is the University, which now (1910) is properly organized and combines in one administrative body the necessary faculties for such an institution. The university will be housed in a building of its own, but teaching is conducted in different places long used for their special purposes. Other institutions for public instruction of technical and professional courses, of which there are twenty in all, although some of them may finally be incorporated into the university, are two normal schools, one for men and one for women; an engineering school; a school of fine arts; a conservatory of music and declamation, and a school of commerce. There are day and night schools, while public instruction is given also in the museums and libraries of the city. Primary instruction within the Federal District is supplied by upwards of 600 schools, some superor, some elementary, and six kindergartens.

Besides the great National Library, there are two other public libraries, and many that can be consulted by the public. The National Museum is famous throughout the world, and its highly interesting collection of Indian Idols is unique, in that the articles are authentic and the majority found within the Mexican Republic. Other museums are open to the public, and are of special interest.

Nineteen Hospitals are maintained in the City of Mexico, by both government and private funds. Several of these are very old, having been founded in colonial times, although the buildings occupied by them are for the most part of later date, but the *Hospital General* and the *Manicomio General* (insane asylum) are of most modern construction and efficiency, so that they are recognized by Mexican and foreign physicians alike as without superiors in America or Europe. The English, American, Spanish and French colonies maintain separate hospitals, and the national railways has a hospital for its employes. It should be noted

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A Modern Residence in the City of Mexico.

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here that these colonies have likewise cemeteries of their own, and in addition thereto are modern public burying grounds. Some of the historical *panteones* (cemeteries) are very interesting, although not ordinarily used to-day for permanent interment.

Ten daily newspapers in Spanish, two in English, and one in French, are circulated in the capital. Altogether 225 or more publications are registered in the capital, among which are several weeklies of a serious or humorous character, usually illustrated, and a number of commercial and financial papers. In the more prominent dailies telegraphic news is liberally printed, and press dispatches are obtained from all over the world.

At the capital of the Republic are maintained an Ambassador from the United States, Ministers from Portugal, Great Britain, Japan, Spain, Honduras, Guatemala, Germany, the Netherlands, France, Belgium, Nicaragua, Austria-Hungary, Brazil, Italy, Chile, Cuba, and China; and a Chargé d'Affaires from Argentina. Resident in other countries but accredited also to Mexico are Ministers from Ecuador, Peru, Persia, and Uruguay. Consuls General from Chile, Colombia, Dominican Republic, Ecuador, Great Britain, Holland, Nicaragua, Norway, Persia, Peru, Portugal, Salvador, Sweden, Switzerland, United States and Venezeula; and Consuls from Argentine Republic (*Vice*), Austria-Hungary, Belgium, Bolivia, Brazil (*Vice*), Costa Rica, Cuba (*Vice*), Denmark, Germany, Italy, Monaco, Panama, and Spain.*

AGUASCALIENTES.

Aguascalientes became a State of the Federation on February 5, 1859, and its constitution was promulgated October 29th of the same year, but revised October 18, 1868.

Boundary, Area, Population.—The State is bounded on all sides, except the south and southeast, by the State of Zacatecas; on the south and southeast by the State of Jalisco. Its area is 7,692 square kilometers (2,969 square miles). Its population (1910) is 118,978, of which 58,058 are males and 60,920 are females.

The climate is temperate, particularly in the *partidos* of Aguascalientes and Rincon de Ramos, where all conditions are extraordinarily favorable. In the higher altitudes of the northeast there is a cold and disagreeable region.

Several rivers water the State, the principal ones being the San Pedro, which changes its name to Aguascalientes near the capital; the Pabellon; the Tejas, and the Juchipilla. A few lagoons or swamps of little importance are found. The abundance of mineral springs has given the State its name (hot waters), as the temperature of these springs, the principal ones being those in the capital, varies from 30° to 40° C. (86° to 105° F.).

This State, the third smallest in the Republic, is second only to Veracruz in the proportion of its cultivated area and the value of its agriculture. About one-half the area is devoted to stock raising or under cultivation, the products being generally those of a temperate zone—cereals like wheat, oats, maize, sweet potatoes, chick peas, green peppers. Honey is produced, and grapes and fruits grow well. The white mulberry for silk worm industry is cultivated. Tropical fruits thrive also, if locality is carefully selected.

Gold, silver, iron, lead, copper, tin, mercury and sulphur, lime, and gypsum are found. The metals appear generally in combination. Two-

*A list of Mexican diplomatic and consular officers maintained by the Republic abroad is given in the Appendix 13, page 378.

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hundred and fifty-nine mining properties in operation were reported in 1909. The chief among these are the Asientos de Ibarra, 30 miles (48 kilometers) northeast of the city of Aguascalientes, historically famous for its silver and copper; and Tepezelá, west of the former. Both mines are in active operation. A smelter is located in the City of Aguascalientes.

The Mexican Central (National Railways) crosses the State with its main line between Mexico City and Juarez; it has a small branch to Cofre, in the northeast, and a longer branch toward the northeast from the capital to San Luis Potosi and Tampico.

The State is divided into 4 Partidos with 8 Municipalidades, which contain 4 cities, 1 town, 3 villages, 25 organized estates, 369 hamlets. The partidos are Aguascalientes; Rincon de Romos; Ocampo, and Calvillo.

The capital and chief city is Aguascalientes, 364 miles (586 kilometers) north of Mexico City. It has electric tram cars, telegraphs, telephones,

ILLUMINATION OF THE GOVERNMENT PALACE IN THE CITY OF AGUASCALIENTES 16TH OF SEPTEMBER, 1910.

good schools, hospitals and libraries, and is celebrated for its almost perfect climate. Among the industries are cotton mills, tobacco factories, pottery works, tanneries, and wine and liquor establishments. It is the most important distributing center of the State, and the location of the shops of the National Railways.

CAMPECHE.

Campeche became a State of the Federation on February 19, 1862, and its constitution was promulgated June 30th, of the same year.

Boundary, Area, Population.—The State is bounded on the north by the State of Yucatan; on the east by Yucatan and the Territory of Quintana Roo; on the south by the Republic of Guatemala; on the southwest by the State of Tabasco; and on the west by the Gulf of Mexico. Its area is 46,855 square kilometers (18,086 square miles). Its population (1910) is 85,795, of whom 43,690 are males and 42,105 are females.

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The climate is hot but the rainfall moderate, except on the coast toward the west. Frosts are unknown. Owing to the swampy condition of the land malarial fevers are common.

The northern portion of the State lacks water courses, although the region is fertilized by rains, temporary brooks and wells. The southern portion is better supplied. The principal rivers are the Champoton, Chibojá Grande, Mamentel, Palizada, a branch of the Usumacinta, Concepción, Balchacay, San Miguel, San Juan, Pakaytum, Nohbican and San Antonio. The Rio Candelaria is the largest in the State and is supposed to have its headquarters in Guatemala, entering Mexico through the Territory of Quintana Roo. These rivers are navigable for short distances, and pass through forests of valuable timber or have cultivated lands on their banks. The Laguna de Terminos, separated from the Gulf by the islands of Puerto Real and Carmen, but communicating with it by narrow channels, is shallow, but the water is sweet; the shores are splendidly wooded. There are other but much smaller lakes and a few lagoons. A few mineral springs are found in the lowlands. The Peninsula of Sabancuy lies between the Lake Terminos and the Gulf.

The agricultural products are rice, *cacahuate* (peanut), tobacco, cotton, indigo, chile, beans, henequen, and hardwoods. Tropical fruits thrive when cultivated. There are no mines, except the deposits of salt, which form of one the chief industries of the State. The industries are those connected with gathering dye and hardwods, fishing, agriculture and stock raising, and the manufacture of hammocks, ropes and mats.

The ports of entry are Campeche, the capital, and Carmen.

A railway, part of the United Railways of Yucatan system, connects Campeche with Merida, 173 kilometers (107 miles). Active construction is begun to connect Campeche with the City of Mexico, through connection with the Tehuantepec National Railway. The distance between the cities is 1,320 kilometers (820 miles). A short line of 7 kilometers (4.3 miles) runs from Campeche to Lerma.

The Maya Indians still preserve in the State their original language.

Campeche is divided politically into 5 Departments, 20 Municipalities, which contain 2 cities, 7 towns, 49 villages, 180 organized estates and 237 hamlets. The Departments are Campeche, Champotón, Bolanchenticul, El Carmen, and Hecelchakan.

The capital and chief city is Campeche. The port has safe anchorage for vessels of moderate draft, but larger craft must remain some miles away. Regular communication is maintained by steamers of the Compañia Mexicana de Navigación along the coast; and freight vessels, many of them carrying passengers, ply frequently to foreign ports. The city was founded in 1517 and is therefore very old, but in many respects it is modern, having telegraph and telephones, public buildings of interest, good libraries and museums, a bank, theater, and a hospital.

El Carmen, the second city and seaport, is on an island of the same name at the mouth of the Laguna de Terminos, and is known chiefly for its traffic in dyewoods and logwoods.

CHIAPAS.

Chiapas became a State of the Federation November 12, 1824, and its constitution was promulgated January 4, 1858.

Boundary, Area, Population.—The State is bounded on the north and northeast by the State of Tabasco; on the east by the Republic of Guatemala; on the south by the Pacific Ocean; on the west by the State of Oaxaca; and on the northwest by the State of Veracruz. Its area is 70,524 square kilometers (27,222 square miles). Its population (1910) is 436,817, of whom 213,841 are males and 222,976 are females.

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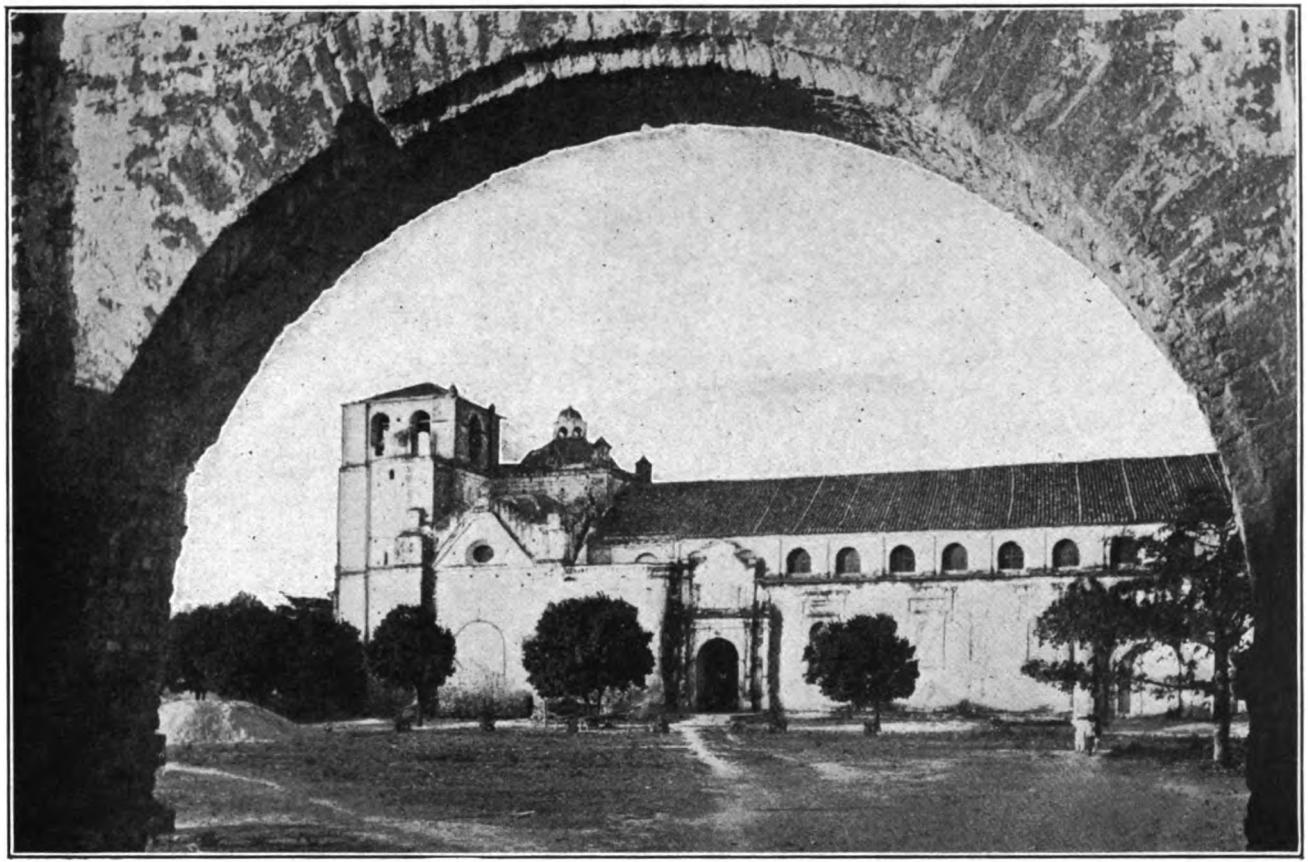

THE CHURCH OF THE ANCIENT TOWN OF CHIAPA DE CORZO, STATE OF CHIAPAS.

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The climate varies according to the altitude, being hot on the coast and the lands irrigated by the Chiapas River, humid on the lowlands, cold in the valley of San Cristobal, but generally temperate in the rest of the State. Rain is abundant, although relatively moderate over the central area.

Several rivers water the State, the principal ones being the Chiapa or Mezcalapa, which has its origin in Guatemala and flows into the Gulf of Mexico after forming the boundary between Chiapas, Veracruz and Tabasco, as the Grijalva; the Usumacinta River, also rising in Guatemala, forms the boundary between that Republic and the State of Chiapas; its final outlet is in the Gulf of Mexico, but receives many affluents from within the State, some of which are navigable, the Usumacinta itself being the carrier of an extensive traffic for a long distance. These two rivers comprise the chief systems of the State, as practically all other streams empty into them. The Suchiate River forms in part the boundary between Chiapas and Guatemala, on the south. Lake Tepancuapan is the largest body of water in the State, and lies at an altitude of 1,447 meters (4,747 feet) above the Pacific Ocean, in the eastern part of the State. Other lakes of less importance are Catazajá and Islotes. The coast is low and sandy, and offers but little natural shelter; one port of entry, Soconusco or San Benito, is recognized, but other roadsteads are used at times. Regular stops are made at San Benito by the Pacific Mail Steamship Company, and by vessels of the Kosmos Line. The custom-house is situated at Tapachula, and the staff go down from there as the cargo is discharged. Several mineral springs are known, but not much utilized.

Agricultural products are coffee, sugar, tobacco, cotton, rice, henequen, vanilla, sarsaparilla, maize, wheat, cacao, chile, beans, potatoes and rubber. In the extensive forests are every variety of tropical timber, cabinet and dyewoods, aromatic and medicinal plants, and abundance of rubber trees. Plantations of rubber trees are also being developed. Cattle are grown in many parts of the State and especially along the Pacific coast strip.

Mineral products are restricted to the rich salt deposits of Tonalá, Custepeques and Soconusco, although 38 mining properties have been declared, in 1909, of gold, gold and silver, silver, with copper, and lead, or alone, of copper, and of iron. Coal is reported, and wells yielding a measurable flow of oil have been put down.

The industries of Chiapas are almost altogether those relating to the agricultural and stock-raising products, but local factories supply some of the demand for hats, soap, tanned hides and cotton goods.

The Pan American Railway is the only line in the State. It runs between the Guatemala frontier at Mariscal (Ayutla) on the Suchiate River, and Gamboa in Oaxaca, through Tapachula and Tonalá; at Gamboa (San Geronimo) connection is made with the Tehuantepec National Railway for the rest of the Republic. A short branch from Tonolá leads to Puerto Arista.

There are said to be 14 distinct Indian tribes in Chiapas, each with its own language. Probably they are intimately connected with the Mayas.

Chiapas is divided politically into 13 Departments, with 122 Municipalities, which contain 7 cities, 14 towns, 159 villages, 998 organized estates, 3,614 hamlets and 3 colonies. The Departments are: Tuxtla Gutiérrez, Comitan, Chiapa, Chilon, La Libertad, Las Casas, Mariscal, Mezcalapa, Palenque, Pichucalco, Simojovel, Soconusco, Tonolá.

Tuxtla Gutiérrez is the capital, 1,115 kilometers (692 miles) from Mexico City, and 140 kilometers (87 miles) from the Pan American Railway station of Jalisco, with which it is connected by a good wagon road, usable at times by automobile. It stands in the midst of an amazingly rich district, but the lack of rail communication has retarded the growth of both town and country. The capital is in telegraphic touch with the

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rest of the Republic, and has banks, hotels and good public buildings. Until 1892 San Cristobal was the capital of the State, and the city retains much of its attractiveness, with a theater, cathedral, hospital, library and institute of arts and sciences. Other places of importance are Tonolá, a busy agricultural center; Tapachula, only a short distance from the frontier of Guatemala and therefore growing in commercial enterprise; and Zapaluta, the interior and only other custom-house on the southern border.

CHIHUAHUA.

Chihuahua became a State of the Federation July 6, 1824, and its constitution was promulgated May 31, 1859.

Boundary, Area, Population.—The State is bounded on the north by the United States (New Mexico and Texas), on the northeast by the United States, on the east by the State of Coahuila, on the south by the State of Durango, on the southwest by the State of Sinaloa, and on the west by the States of Sinaloa and Sonora. Its area is 233,094 square kilometers (89,974 square miles), and is therefore the largest State of the Mexican Union. Its population (1910) is 405,265, of whom 207,942 are males and 197,323 are females.

The climate of the entire State is salubrious and healthful. The summers are long, and for a few months considerable heat is felt in the lower elevations during the middle of the day, but the nights are always cool and pleasant. During the short winters, especially in the elevated portions of the table-lands, frosts frequently occur, and sometimes snow. Considerable rain falls during the summer, but in winter the precipitation is very light.

The rivers are unimportant. The chief are the Bravo del Norte (Rio Grande), forming in part the boundary between the United States; the Conchos, a tributary of the Rio Grande, and the Casas Grandes, on the banks of which are situated some of the interesting prehistoric ruins of Mexico. There are small lakes, Guzman, Santa Maria, Patos, and others of no commercial importance. In many places mineral springs are found, chiefly sulphur and iron.

The agricultural products, although less remarkable than those of the mines, are nevertheless of great value in estimating the wealth of the State. As the climate is temperate, maize, wheat and alfalfa grow well; fruits and vegetables can be highly cultivated, but as yet the crop is not enough to satisfy the local market. Cotton, sugar cane, oats, beans, barley, frijoles, peppers, potato, tobacco and the grape, are grown in their proper places. One of the most important pursuits is the raising of cattle, sheep, horses, mules and hogs, which are exported annually to the United States. With irrigation, the large tracts of land already devoted to these purposes can be enormously increased, as the State is by no means as well occupied as it should be. There is here an excellent field for the investment of capital. The great dams on the Boca Grande and Conchos Rivers will put under irrigation an immense area of virgin land.

The mineral products reported are gold, silver, copper, lead, iron, zinc, coal, manganese (oxide), and cinnabar. The mines in operation are of gold, silver, copper, lead and iron. The State of Chihuahua is naturally divided into two parts, the eastern or table-land section, altitude from 3,000 to 6,000 feet (914 to 1,828 meters), and the western or Sierra Madre section, 6,000 to 10,000 feet (1,828 to 3,048 meters).

In the eastern section, Santa Eulalia is the most important camp, located 17 miles (27 kilometers) southeast of Chihuahua City, and was discovered in 1703. Batopilas, southwest of Chihuahua City, on the slope of the Sierra Madre, was discovered in 1632. Arteaga lies west-north-

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west of Batopilas, and several mining camps are in this neighborhood. North of here is the Rayon district, where are several well-developed properties. South of Chihuahua is the Parral district, with many old and new mines. Mina, the district on the slope of the Sierra Madre mountains, to the west, is another of the active mining sections of the State. At the last official report there were 5,249 mining properties listed.

The principal industries are those connected with agriculture and mining. Manufacturing has not assumed proportions commensurate with them.

Chihuahua is well supplied with railways. The Mexican Central (National Railways) passes through the State, and other systems are the Sierra Madre and Pacific; the Parral and Durango; the Mexican Northern; the Chihuahua and Pacific; the Kansas City, Mexico and Orient. Besides these there are several local lines operating under State concessions and serving mining regions.

Of the Indian dialects spoken, the Mexican, Otomí, Pima, Tarahumar, Tehuima and Tepehua are recognized.

Chihuahua is divided politically into 12 Districts with 58 Municipalities, containing 6 cities, 9 towns, 167 villages, 281 organized estates, 1,604 hamlets, and 4 colonies.

The Districts are: Iturbide, Bravos, Hidalgo, Andres del Rio, Camargo, Jimenez, Arteaga, Galeana, Mina, Benito Juarez, Guerrero and Rayon.

The capital and chief city is the City of Chihuahua, situated about in the center of the State. It is a progressive city with a large foreign resident community, lying 225 miles (362 kilometers) south of El Paso. Although historically very old (1539), it is thoroughly modern, with tramcars, banks, hotels, theaters and such elements of comfort and amusement.

Parral (*Hidalgo del*—named after the patriot) is an influential town, formerly the residence of the Spanish Governor. Since its increased importance as a mining center it has entered upon a period of active development; there are banks, a theater, hotels and an international club.

Ciudad Juarez is the frontier custom-house, opposite El Paso, Texas.

COAHUILA.

Coahuila became a State of the Federation May 7, 1824, and its constitution was promulgated May 31, 1869.

Boundary, Area, Population.—The State is bounded on the north by the United States (Texas); on the east by the State of Nuevo Leon; on the south by the State of San Luis Potosi; and on the west by the States of Durango and Chihuahua. Its area is 165,099 square kilometers (63,728 square miles), making it the third largest State in the Union. Its population is 367,652, of whom 176,779 are males and 190,873 are females.

The climate is relatively healthy. Winds are very variable and rains abundant in the districts of Saltillo, Viesca, and Rio Grande; moderate in Parras, and scarce in Monclova and the lowlands. Frost is occasional even in the southern portion of the State and very frequent in the Rio Grande section.

The rivers are the Sabinas, the Nadadores, the Monclova and the Nazas, the last named entering the State from Durango and emptying its waters into the Lagoon of Mayran or Parras. The natural watershed is toward the Rio Grande, which forms the boundary between the State and Texas. The principal lagoons are the Alamo, or Parras, in the district of Viesca; the Mayrán, or Muerta, larger than the former, in the Parras district; the Agua Verde and the Santa María, in the district

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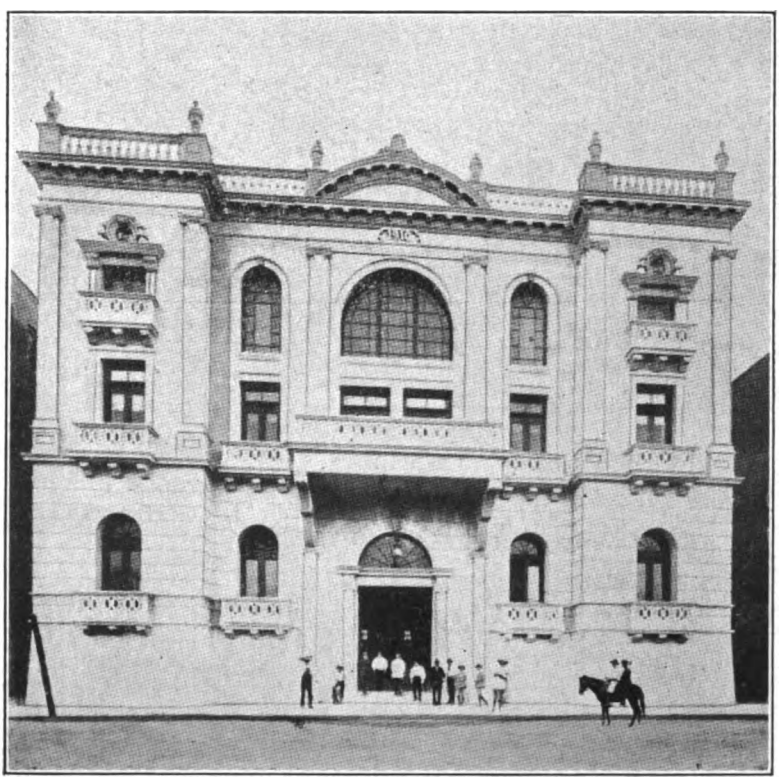
of Monclova. Several mineral springs are known, and a few of them (hot springs) are utilized.

Agriculture is the principal industry of the State; cotton, corn, wheat, beans, pease, sugar cane, linseed, and about 30 species of leguminous plants being the most common products. Grape culture is attaining greater importance daily, and it is claimed that the product of the district of Parras is sweeter and more delicious than that of California, and equal, if not superior, to the Malaga and Granada varieties. Almost all the plantations in Coahuila are equipped with modern machinery and implements, and follow the most advanced systems of cultivation. One of the greatest sources of wealth is cattle raising, the plains affording excellent pasturage for the stock. Efforts have been made to improve the breeds by crossing the native cattle with fine imported specimens. Several foreign companies have bought lands for cattle breeding. In the southwestern portion of the State is the famous Laguna district, which furnishes 90% of the cotton supply of the Republic. Here also the guayule plant grows in remarkable abundance.

The mineral wealth of the State remained unrecognized until a few years ago, but its development has since been so steady and rapid that now mining may be said to constitute one of the chief industries. The



CASINO DE LA LAGUNA, TORREON, STATE OF COAHUILA.

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wealth of Sierra Mojada, Sierra del Carmen, and the valley of Santa Rosa is almost incredible. These mineral regions are in reality immense silver deposits, which, in conjunction with the coal fields of Piedras Negras (Ciudad Porfirio Diaz) and Sabinas Valley, are making the State recognized as one of the richest in the Republic. Besides the silver and coal, gold, copper, lead, iron, sulphur and onyx are known to exist. The lead-ore camp of Sierra Mojada was discovered in 1878, and is located in the western part of the State. The coal fields parallel the Sabinas River to a considerable extent. Jimulco, in the southwestern part of the State close to the Durango line, is one of the largest copper mines in the Republic. Zinc is mined on a moderate scale. Industries are chiefly associated with agriculture and mines, but in Torreon are large cotton and guayule factories, and in Saltillo fine sarapes have been the product of local looms for generations.

Coahuila has crossing it the Mexican International Railway (National Railways of Mexico) from Ciudad Porfirio Diaz to Torreon, with branches to San Antonio, Minas de Hondo, Musquiz, Cuatro Ciénegas, Rosita and to Anhelo. From Saltillo the Coahuila and Zacatecas Railway runs from Saltillo to Concepción del Oro in Zacatecas. The Mexican National and the Mexican Central (both National Railways) have branches across the State from Saltillo.

Kikapoo, Mexican and Otomí are the native Indian languages spoken.

Coahuila is divided politically into 5 Districts, with 33 Municipalities, containing 6 cities, 27 towns, 179 organized estates, and 1,111 hamlets.

The Districts are: Centro, Monclova, Parras, Rio Grande and Viezca.

Saltillo is the capital of the State and the principal city. It is now a modern city, with good drainage and water supply, banks, hotels, clubs, theaters and public buildings. It is a manufacturing center, with cotton and ixtle mills. Torreon is the chief town of the Laguna district, from which almost the entire cotton supply of the country is obtained, and it is also an important commercial place, owing to the fact that it is the junction of the two great railway lines of the north (Central and International). There is electric car service to neighboring towns. Torreon contains smelters, soap factories, rubber works, packing houses, machine shops and flour mills. Ciudad Porfirio Diaz (formerly Piedras Negras) is one of the largest custom-houses on the northern frontier. It lies opposite Eagle Pass, in Texas. Parras is located in a fertile valley noted for its fruit production, particularly grapes.

COLIMA.

Colima became a State of the Federation October 4, 1824, and its constitution was promulgated October 16, 1857.

Boundary, Area, Population.—The State is bounded on the north and northeast by the State of Jalisco; on the east by the State of Michoacan; and on the south and west by the Pacific Ocean. The area is 5,887 square kilometers (2,273 square miles). Its population is 77,704, of whom 38,003 are males and 39,701 are females.

The climate is cold in the north, temperate in the center, and hot and relatively unhealthy along the coast.

The interior of the State is mountainous, being traversed by off-shoots of the Sierra Madre del Sur. The northern section, occupied by the slopes of the Colima volcano, constitutes the mountainous part of its territory, the ascent from the coast rising gradually to a height of 1,200 meters (2,428 feet). The littoral is washed by the Pacific for an extent of 160 kilometers (100 miles). It is low and sandy and contains rich salt deposits. The Revillagigedo group, composed of four desert islands of volcanic origin, named Socorro, San Benedicto, Rosa Partida, and Clarión, lies 240 kilometers (150 miles) northwest of Manzanillo.

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The irrigating streams are the Armería and Coahuavana rivers and their affluents. The former traverses the center of the State from north to south, emptying into the Pacific through the mouth of the Pascuales after a course of 294 kilometers (183 miles), its navigable extent only reaching 20 kilometers (12 miles) from the mouth. The Coahuayana forms the natural boundary line between the States of Michoacan and Colima. In addition to the water courses above mentioned there are the lakes of Cuyutlán and Alcuzagüe. There are mineral springs at the base of several of the mountains.

The principal industries are agriculture, stock raising, and the exploitation of the salt deposits. The fertility of the soil, due to its fine natural irrigation, permits the culture of various products, among others coffee, cacao, tobacco, rice, cotton, indigo, sugar, escoba, cereals, and leguminous plants. The coffee of Colima is regarded in Germany as the best on the market. For the development of its agricultural wealth the State

GOVERNMENT PALACE, CITY OF COLIMA.

is greatly in need of colonists. The mineral wealth lies principally in the salt deposits, which extend all along the coast. There are also mines of silver, gold, copper, and sulphur.

Colima carries on an active trade with the towns south of Jalisco, with Guadalajara, Mazatlán, and other Mexican ports, and with the foreign ports of San Francisco and San Diego (California), also with Germany and the Hawaiian Islands. The maritime trade is conducted through the port of Manzanillo, and consists chiefly of exports of rice, coffee, rubber, fruits, cabinet woods, dyewoods, corn, hides and skins, minerals, etc., the imports being woolen, linen, and silk goods, alimentary products, glassware, arms and ammunition, wines and liquors, etc. Overland traffic is carried on by rail from Manzanillo to Colima and to the interior of the Republic; in other instances, by wagon roads.

A division of the National Railways of Mexico now connects the port of Manzanillo with Guadalajara, through the city of Colima.

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The State of Colima is divided politically into 3 Districts, containing 7 Municipalities, in which are 2 cities, 1 town, 14 villages, 28 organized estates and 252 hamlets.

The Districts are: Centro, Alvarez. Medillin.

The capital and chief city of the State, Colima, on the banks of the Colima, 915 kilometers (569 miles) from Mexico city, is an old and picturesque city, noted for the beauty of its surroundings. It was founded in 1523 and was the third town of importance established in New Spain. The railway to the interior was opened in 1908. There are tramcars, electric lights, a theater, banks, a cathedral and interesting public buildings. Manzanillo is the port of entry for the State and the distributing center for this part of the coast. The Government is doing a great deal to make the harbor modern in every respect. Service between Manzanillo and other ports of the Republic is maintained by the *Campañia Naviera del Pacifico*, flying the Mexican flag; with Pacific coast ports outside of the Republic by the Pacific Mail Steamship Company with regular steamers between San Francisco and Panama, and by the Kosmos Line, from Hamburg; by the Canadian Mexican Pacific Steamship Company from Vancouver and Victoria, B. C.; the Toyo Kisen Kaisha, Japanese Steamship Line of Tokio, Japan, has steamers between Japan, Manzanillo and Salina Cruz, to South America.

DURANGO.

Durango became a State of the Federation May 22, 1824, and its constitution was promulgated May 25, 1863.

Boundary, Area, Population.—The State is bounded on the north by the State of Chihuahua; on the east by the State of Coahuila; on the southeast by the State of Zacatecas; on the south by the State of Zacatecas, the State of Jalisco (very slightly), and the Territory of Tepic; and on the west by the State of Sinaloa. Its area is 109,495 square kilometers (42,265 square miles); its population is (1910) 436,147, of whom 221,105 are males and 215,042 are females.

The climate is cold in the higher altitudes of the Sierra Madre mountains, warmer on the slopes, especially toward the Pacific, hot on the coast, and temperate in the valleys and plateaus, particularly of the Nazas basin. Rainfall is moderate, and frosts are frequent in the mountains.

The most important river is the Nazas, in the northern part of the State. It rises on the eastern slope of the Sierra Madre and empties into Habas Lake, after a course of 600 kilometers (373 miles). Its principal affluents are the Santiago and San Juan rivers, the former traversing an extent of 215 kilometers (134 miles) before its junction with the main stream. The Tunal River rises west of the city of Durango, and after a course of 150 kilometers (93 miles) enters the Territory of Tepic. The Suchil, or Nombre de Dios, an affluent of the Tunal; the Rio Chico, or Alaponeta, and the Aguanaval are the other most important streams. There are also some small lakes, the principal being Colorado, Guatimapé, Ojo de Agua, Sanceda, Indé, Cuencamé, and Atotonilco. Near the city of Durango there is a fine mineral spring, holding in solution a large quantity of iron.

The most important agricultural region is included in the partidos of Mapimí, Durango, San Juan del Rio, and Papasquiaro, the agricultural products being barley, corn, wheat, cotton, tobacco, fruits, leguminous plants, and sugar cane. The grapes of Villa Lerdo and Cuencamé are famous. A considerable portion of the Laguna cotton district lies in Durango. In the Sierra Madre range there are large tracts of timber lands.

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The leading stock-raising sections are the partidos of Durango, El Ojo, Cuencamé, Nazas, Indé, and Papasquiaro.

Durango is one of the foremost mining States in Mexico, and some of the mining camps are historically famous for their yields. The best-known mines are Guanacevi, in the northwestern part of the State; El Oro and Indé, forming one district north of Durango City at an altitude of 8,500 feet (2,590 meters). Gold and silver are abundant in these veins; Bacis and Sapioris, almost west of Durango City, yielding gold and silver; San Dimas, northwest of the city and close to the Sonora frontier, chiefly silver with some gold; Promontorio, north of the city, and not far from Potrillos (tin) and Coneto (silver), at 8,000 feet (2,438 meters), produces silver and some copper; Velardeña, southwest of Torreon, has silver, lead and copper; Mapimi, northwest of Torreon, silver, lead and gold. The Cerro del Mercado (Iron Mountain) is an immense deposit of iron close to the city of Durango. Sulphur, rubies and other valuable deposits are known to exist.

Durango has developed several industries; tanning is carried on regularly, carpets and rope are made from ixtle fiber, there are pottery works, soap and candle factories, and cotton mills.

The Mexican Central and Mexican International (National Railways of Mexico) enter the State; the system extends to the city of Durango and thence northwest to Tepehuanes, and branches have been built to Velardeña, Mapimi, Tlahualilo and Descubridora.

Indigenous languages are the Cora, Huichol and Tepehua.

The State of Durango is divided politically into 13 Partidos, with 43 Municipalities, containing 7 cities, 14 towns, 93 villages, 301 organized estates and 1,746 hamlets. There is one colony to be established within the State.

The Partidos are: Durango, Cuencamé, El Oro, Indé, Mapimi, Nazas, Mezquital, Nombre de Dios, San Dimas, San Juan de Guadalupe, San Juan del Rio, Santiago Papasquiaro, Tamazula.

The City of Durango is the principal city and the capital of the State. It has the name of "town of sunshine" on account of its delightful climate. It is 1,389 kilometers (863 miles) from Mexico City. There are many fine buildings, notably the cathedral, considered one of the finest in the Republic. Banks, clubs, tramcars, telegraphs, telephones and electric lights make of it a modern city. Lerdo, the second city of importance in the State, and only a few moments' ride from Torreon (Coahuila), is in the center of a highly developed agricultural district, and has made great progress industrially.

GUANAJUATO.

Guanajuato became a State of the Federation January 8, 1821, and its constitution was promulgated May 14, 1861.

Boundary, Area, Population.—The State is bounded on the north by the State of San Luis Potosi; on the east by the State of Querétaro; on the south by the State of Michoacan, and on the west by the State of Jalisco. Its area is 28,363 square kilometers (10,948 square miles). Its population (1910) is 1,075,270, of whom 526,325 are males and 548,945 are females.

The climate is temperate and agreeable, except in the higher altitudes of the mountain ranges, the mean temperature being 21° C. (about 70° F.), and the highest 28° C. (82.40° F.) during the hot months. During the rainy season the rainfall is heavy in the plains and valleys and moderate in the mountains. This season extends from the middle of May until the beginning of July. The prevailing winds are from the northeast, changing to southeast at the approach of the rainy season.

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The principal rivers are the Lerma, the Laja and the Turbio, the last two being affluents of the former. The Lerma River rises in the State of Mexico, traverses the State of Guanajuato for a distance of 147 kilometers (236 miles), and empties into the Pacific Ocean near San Blas,

"LA CONSTANCIA" STREET, GUANAJUATO.

in the Territory of Tepic. The Laja rises in the Sierra de Guanajuato, and, after receiving the waters of many affluents and traversing a course of 126 kilometers (203 miles), empties into the Lerma. The Turbio, or Gomez, waters a territory 113 kilometers in length from its rise in the Sierra de Guanajuato to its junction with the Lerma. This State is also irrigated by the Irapuato River and several smaller streams. The

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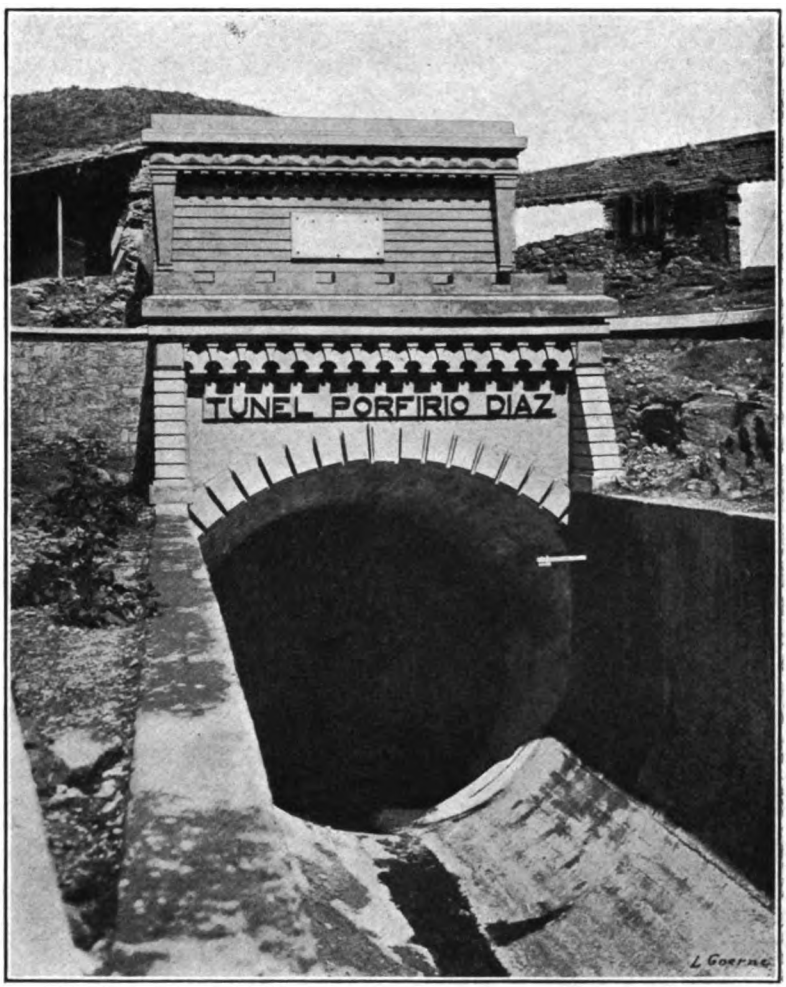
only lake is Yuririapúndaro (lake of blood), which is 97 square kilometers (36 square miles) in extent and contains several small islands. Near the valley of Santiago there is a large circular well, known as the Albercas, which is believed to be the crater of an extinct volcano. Its



"Porfirio Diaz" Tunnel.

This tunnel was built to receive the overflow from the river running through Guanajuato, and thus to prevent the disastrous floods which have at times overwhelmed the city.

waters are not potable and its depth has never been ascertained. Mineral springs are abundant; prominent among them is a spring near Silao to

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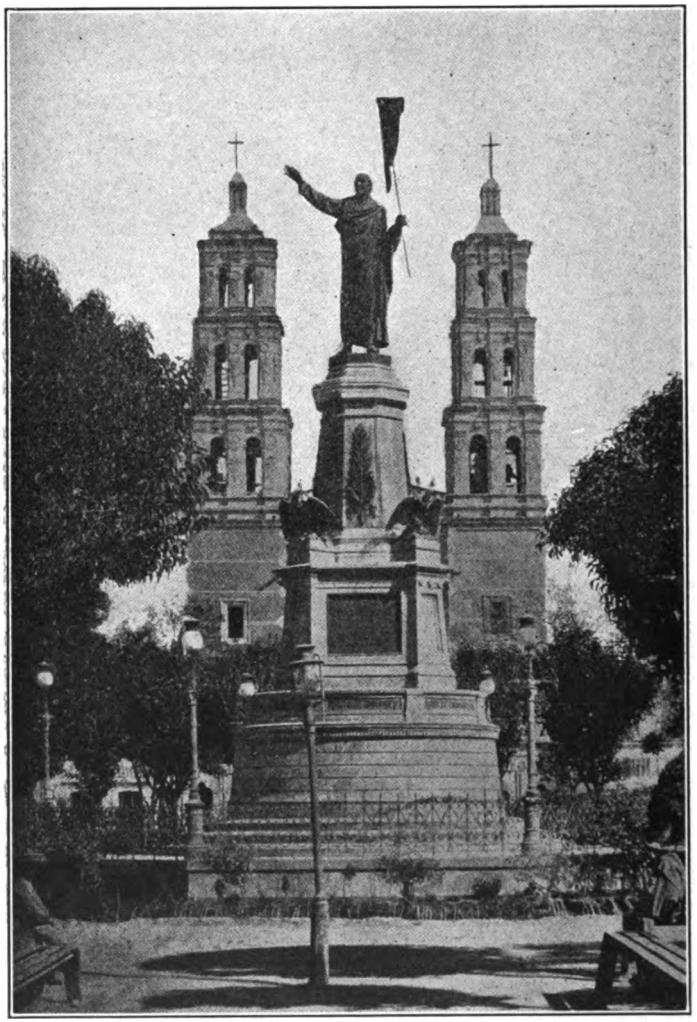
which the Indians attribute miraculous properties, and a mud spring near Irapuato.

The territory of the State is mountainous, but there is a flat section known as the *Bajio* or lowlands, famous as being one of the most fertile localities of the Republic for cereal crops. Agriculture and stock raising are carried on in the valleys. The principal products are cereals and leguminous plants, maize, wheat, tobacco, alfalfa, chile, fruits and canary



THE PARISH CHURCH AT DOLORES, HIDALGO, STATE OF GUANAJUATO.

In front thereof a monument has been erected by a grateful people to their former "Cura" Hidalgo, "The Father of Mexican Independence."

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seed, of which last a great deal is exported. Hogs, sheep, goats and cattle are grown in abundance.

The State of Guanajuato is one of the richest mineral areas in the world. The mining region follows the line of the angle formed by the Sierra Gorda and Sierra de Guanajuato, there being in all five mining districts. Gold, silver, mercury or cinnabar, tin, iron, lead, argentiferous lead, copper, argentiferous copper, magistral or sulphide of copper, bismuth, hematite and sulphur are all mined in the State. The chief districts are that near the city of Guanajuato itself, where gold and silver both are found, and in which are some of the oldest mines of the Republic; Leon district, west of the capital, turns out gold, silver, iron, copper, tin, bismuth, mercury and lead; the Sierra Gorda district, northeast of the capital, where silver-bearing galena is worked, and also copper and lead ores; (San Miguel de) Allende group, east of the capital, produces, besides gold and silver, tin, iron and mercury; the Santa Cruz district, southwest of the capital, where silver, gold and quicksilver are found.

The principal industries are the manufacture of leather goods, palmetto hats, potteries, wine and tobacco; and there are woolen, cotton, flour and other mills.

The National Railways of Mexico (National and Central) has main lines crossing the State. There is a branch from Silao, on the Central division, to the city of Guanajuato; and from Irapuato the line to Guadalajara (Jalisco) begins. Valle de Santiago, San Luis de la Paz, and San Gregorio are other places reached by branch lines.

Indigenous languages are Cahita, Chichimeca, and Otomí.

The State of Guanajuato is divided politically into 5 Departments, containing 32 Districts, with 45 Municipalities, 16 cities, 13 towns, 48 villages, 474 organized estates, 3,594 hamlets.

The Departments are Allende, Celaya, Guanajuato, Leon, Sierra Gorda.

Guanajuato, the capital and chief city of the State of that name, 406 kilometers (252 miles) from the City of Mexico, is one of the richest, oldest and most picturesque towns of the Republic. It is well supplied with electric light, tram cars (soon to be run by electricity), and the fine engineering works constructed to control the waters of the river (Guanajuato) and also to furnish drinking water to the city, deserve special study. The Government Palace, Congress, the Mint, the State College, Market, Theater, Hospital and many historical structures and places, make the city very interesting. Some of the best mines of the State are in or near the city. Dolores Hidalgo, the residence of the parish priest who raised the cry for independence in 1810, is a small town north of the capital, situated in the midst of a beautiful and fertile plain. The national Government plans to make of Dolores a sort of national sanctuary.

GUERRERO.

Guerrero became a State of the Federation May 18, 1847, and its constitution was promulgated October 25, 1862.

Boundary, Area, Population.—The State is bounded on the north by the State of Michoacan, Mexico, Morelos and Puebla; on the east by the State of Oaxaca; on the south by the Pacific Ocean, and on the west by the State of Michoacan. The area is 64,756 square kilometers (24,996 square miles). Its population is 605,437, of whom 301,833 are males and 303,604 are females.

Climatic conditions vary according to the altitude of the districts. On the coasts the heat is excessive, from 35° to 36° C. (95° to 96.80° F.), and the rain falls in torrents, precipitation being moderate in the temperate lands only. Frosts are frequent in the high altitudes of the Sierras.

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Guerrero is mountainous throughout almost its entire extent, being traversed by the Sierra Madre del Sur, which reaches its greatest altitude at 2,800 meters (9,186 feet). The valleys betwen the cordilleras are narrow, and the highest peaks are Tlacotepec and Tiotepec, 2,800 meters (9,186 feet) and Escalera, 2,521 meters (8,269 feet) in height.

The rivers of the State, on account of the broken surface of the territory, have very rapid currents. The principal is the Mexcala or Balsas, also known as the Atoyac or Poblano. Its headwaters are in the Tlaxco Mountains of the State of Tlaxcala, whence it enters Guerrero on the east, dividing the State into two sections, the southern occupied by the Sierra Madre range and the northern by the slopes of the mountain chains from the States of Mexico and Morelos. The river is 687 kilometers (427 miles) in length, but is navigable for small craft only. All the waters of the State are tributary to it. The principal lakes are Payahualco, Chantengo, Neixpa, and San Marcos.

The Pacific coast line of the State is about 500 kilometers (310 miles) in extent, the shores being low, sandy, well sheltered, and possessing excellent ports and harbors. Acapulco, the principal port of the State, is classed among the finest harbors of the world, by reason of its beautiful, well-sheltered bay, measuring over six kilometers (about four miles) in length by over three kilometers (two miles) in breadth, and with a depth of about 16 fathoms. Other Pacilc ports in the State are Petlacala, Sihuatanejo and Papanoa.

The depth of water at the entrance between Port Diamonte and Point Grifo is 20 to 37 fathoms; inside, the depth is 16 fathoms and under, the bottom holding well. Shelter is excellent, the harbor having a landlocked anchorage about one mile square. Vessels may anchor close to shore; large ones discharge into lighters.

Agriculture in this State is undeveloped. There is abundance of good and fertile land where maize, beans, rice, chickpeas, cotton, coffee, cacao, sugar cane, fruits and tobacco can be grown. At present the production is restricted to local needs. Stock raising is important, and the dairy industry is developing. Manufacturing is confined to sugar cane products, wine, palm oil, some cotton spinning, tanning and simple domestic products. The State is very rich in timber resources, especially hard tropic woods for construction, but easier access is necessary to develop them.

The mineral wealth of Guerrero is considerable but as yet imperfectly studied. The principal mining districts are Hidalgo, in the extreme northern portion of the State not far from Iguala, where silver is the ore most secured. Quicksilver is found at Huitzuco. Aldama district is southwest of the above, where lead, gold and silver have been returned, with copper, iron and sulphur. The Bravos district, not far from the capital, is where gold placers have been worked.

The State of Guerrero is divided politically into 14 Districts, with 67 Municipalities, containing 13 cities, 2 towns, 300 villages, 196 organized estates and 1,052 hamlets.

The Districts are: Abasolo, Alarcon, Allende, Aldama, Alvarez, Bravos, Galeana, Guerrero, Hidalgo, Mina, Montes de Oca, Morelos, Tabares and Zaragoza.

The capital and principal city is Chilpancingo, about in the center of the State, called also de los Bravos, and Ciudad Bravos, in honor of the revolutionary heroes. It is 319 kilometers (198 miles) from the City of Mexico, and 178 kilometers (111 miles) from the port of Acapulco. The city is small and picturesque, but has suffered severely from recent earthquakes. It is connected at present by good roads with the terminus of the railway at Balsas from Mexico City, and with Acapulco, but railways to both places are projected. Acapulco is one of the best natural harbors on the Mexican Pacific coast; it is served regularly by the

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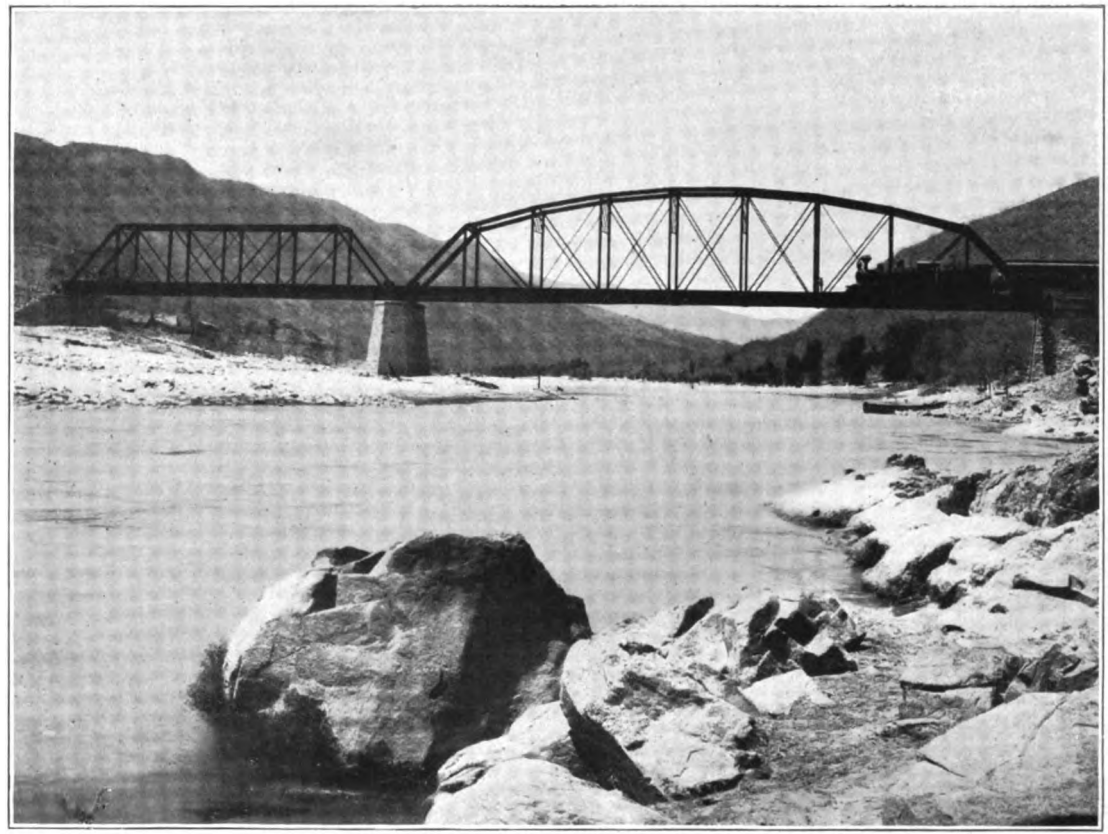

RAILWAY BRIDGE IN THE STATE OF GUERRERO, OVER THE BALSAS RIVER.

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Compañia Naviera de Pacifico, the Pacific Mail Steamship Company, the Canadian-Mexican Pacific Steamship Company, and the Kosmos Line. Iguala, one of the largest and most important towns in the State, is famous as the place where the "Plan of Iguala" was proclaimed by which Mexican liberty was asserted. The town lies in the center of a rich agricultural and mining district, and will be better known commercially when the railway between Acapulco and Mexico City is opened.

HIDALGO.

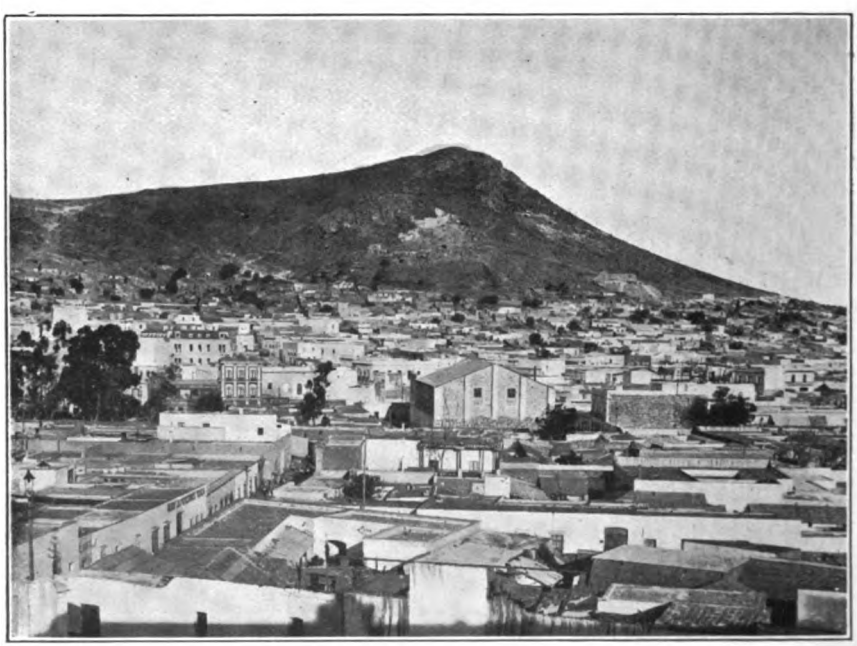
Hidalgo became a State of the Federation January 15, 1869, and the constitution was promulgated in 1870.

Boundary, Area, Population.—The State is bounded on the north by the States of San Luis Potosi and Veracruz; on the east by the States of Veracruz and Puebla; on the south by the States of Tlaxcala and Mexico; and on the west by the State of Querétaro. Its area is 22,215 square kilometers (8,575 square miles). Its population is (1910) 641,895, of whom 313,032 are males and 328,863 are females.

The State is mountainous, being traversed by the eastern ramification of the Sierra Madre. The southern and western portions are comparatively flat.

The climate is generally mild rather than cold on the uplands and plateaus, and hot or temperate according to the varying altitudes of the lower districts.

There are no large rivers, the principal streams being the Tula and its tributaries, the Amajague and its affluents, and the Metztitlan or Rio



BIRD'S-EYE VIEW OF THE CITY OF PACHUCA, STATE OF HIDALGO.

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Grande and its branches. There are other rivers of lesser importance and several waterfalls, among them being the Regla cascade, whose waters are used by an electric company to supply motive power for several reduction works. The largest lake is the Metztitlan, which is 17 kilometers (10½ miles) in length. Mineral springs abound.

The chief agricultural products are the cereal crops, coffee, tobacco, fruits, peppers, maguey and sugar cane. The timber resources are considerable.

Active mining operations have, since colonial times, been conducted at various points in the State, and this forms the most important industry, as almost every district is a mining center. The principal mining camps are Pachuca, discovered in 1522 and celebrated because here Bartolomé de Medina invented in 1557 the *patio* process. The city of Pachuca is 62 miles (100 kilometers) north of Mexico City on the western slope of the eastern branch of the Sierra Madre; gold, silver, platinum, copper, iron, lead, zinc, antimony, manganese and mercury are found. Real del Monte, on the eastern slope of the Sierra Madre, forms in reality part of the Pachuca district. El Chico is also on the western slope, just north of Pachuca. Zimapan, in the northern part of the State, produces chiefly silver-lead and silver-copper.

The principal industries are the production of ores, the manufacture of cotton and woolen goods, bricks, tiles and native wares for local use.

The National Railways of Mexico has two lines into Hidalgo as far as Pachula, and there are extensions to Irolo, Beristain through Tulancingo, and to Honey, and to Apulco and Tortugas. The Mexican Railway also has a branch to Pachula.

Mexican and Otomí are the native Indian languages spoken.

The State of Hidalgo is divided politically into 15 Districts, with 71 Municipalities, containing 4 cities, 9 towns, 441 villages, 212 organized estates and 1,240 hamlets.

The Districts are: Actopan, Apan, Atotonilco, Juejutla, Huichapan, Ixmiquilpan, Jacala, Metztitlan, Molango, Tenango, Tula, Tulancingo, Zacualtipan, Zimapan, Pachuca.

The capital and principal city, Pachuca, 109 kilometers (68 miles) from Mexico City, is one of the oldest mining centers and one of the first Spanish settlements in New Spain. It has all the appearance of a mining camp, but there are attractive buildings, such as the Palace of Justice, the Scientific and Literary Institute, an Observatory, a School of Mines and a Library. A fine theater, good banks, tramcars, and electric service with telegraph and telephones, make the city modern.

JALISCO.

Jalisco became a State of the Federation October 4, 1824, and its constitution was promulgated December 6, 1857.

Boundary, Area, Population.—The State is bounded on the north by the Territory of Tepic and the States of Durango, Zacatecas and Aguascalientes; on the northeast by the State of San Luis Potosi; on the east by the States of Guanajuato and Michoacan; on the south by the States of Michoacan and Colima; and on the southwest and west by the Pacific Ocean. Its area is 86,752 square kilometers (33,486 square miles). Its population is 1,202,802, of whom 584,672 are males and 618,130 are females.

The climate of the State varies according to altitude, but in general it is cool in the northeast, mild in the center, and hot in the lower areas of the south and southwest. Taking all in all, it may be said that it is the finest State in the Republic, considering climate, resources and scenery.

The eastern portion of the State is traversed by the Sierra Madre

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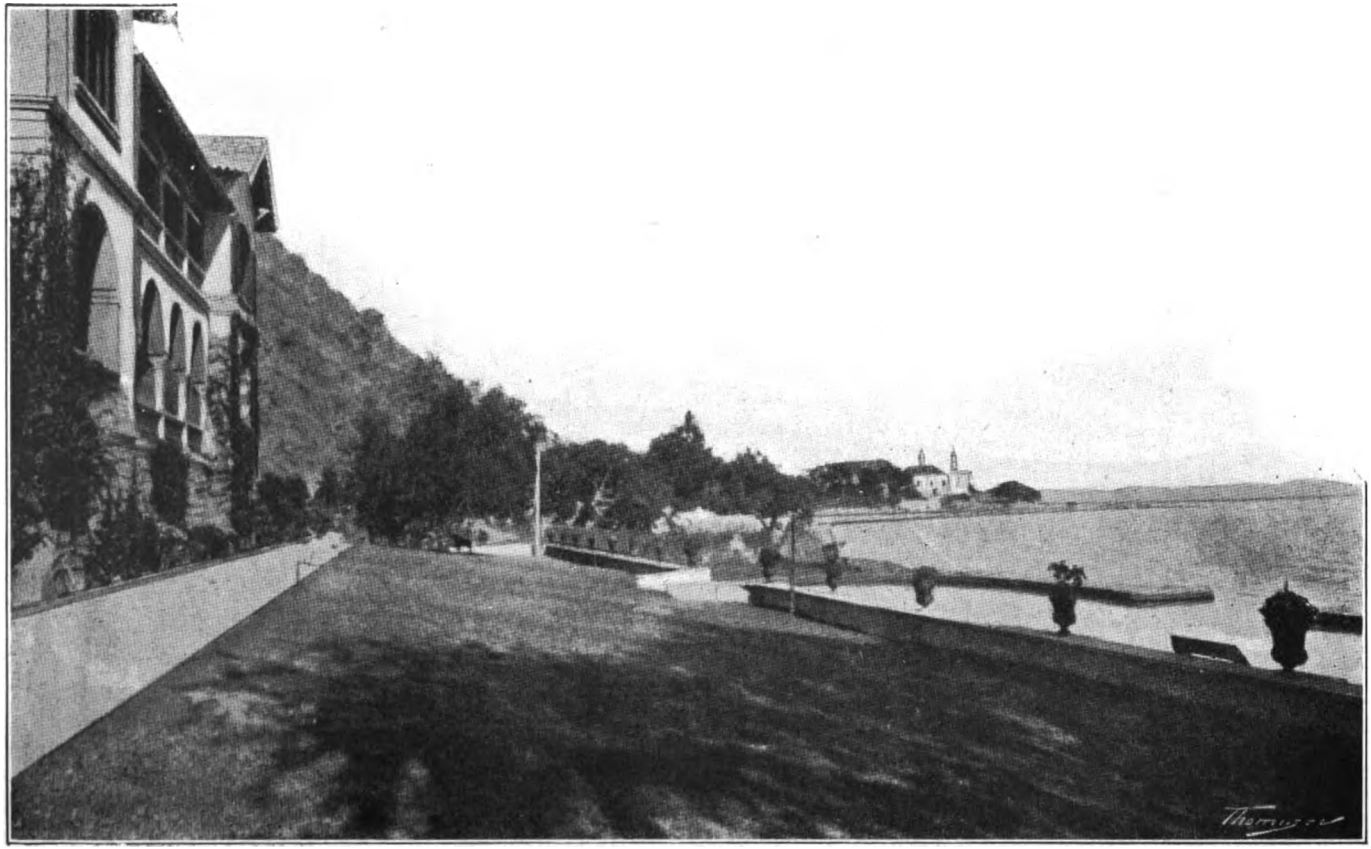

LAKE CHAPALA, STATE OF JALISCO.
Fashionable summer resort.

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DEGOLLADO THEATER, GUADALAJARA, STATE OF JALISCO.

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range, in which occur a number of imposing mountain peaks. The most noted of these are the Tapalpa, Tigre, Nevado, and Colima. The latter is an active volcano the elevation of which is 4,304 meters (14,120 feet) above the level of the sea. The northern and northeastern portions of the State are very mountainous and form a veritable network of spurs and isolated peaks from the Sierra Madre range. Between these are found picturesque and fertile valleys of varying elevations and extent. The State in its entirety possesses a vast territory, watered by numerous lakes and rivers.

The largest and most important stream is the Santiago, or Lerma, River. This river rises in Lake Chapala in the extreme southeastern portion of the State, and flows in a northwesterly direction through Jalisco and the Territory of Tepic, emptying into the Pacific Ocean at a point north of the port of San Blas. It is about 750 kilometers (466 miles) long, and drains a territory containing, it is estimated, 25,000 square kilometers (9,650 square miles). In its course toward the sea this stream forms beautiful cascades near the village of Juanacatlan in the vicinity of the city of Guadalajara. These are of such a grand and imposing character that they have been appropriately called the Niagara of Mexico. Their height is about 20 meters (66 feet). The river at this point is 160 meters (525 feet) wide. The force generated by these celebrated falls is enormous, and a large electric plant has been erected there. This plant supplies electric power to the city of Guadalajara, the capital of the State, 7 kilometers (4½ miles) distant. This water power is also utilized by a large number of factories in Guadalajara and vicinity in the operation of their plants, and is fast making that city one of the great manufacturing centers of the Republic.

Other important rivers of the State are the Acaponeta and San Pedro, both of which flow into Lake Mexcaltitlán. The Armenia and Ameca rivers are also streams of considerable size and importance. One of the most beautiful lakes of the State, and the largest in the Republic, is Lake Chapala, the surface area of which is 234 square kilometers (about 90 square miles). The waters of this lake contain a great abundance of edible fish. German carp abound, the Mexican Government having stocked the lake some years ago with this variety of fish. Lake Chapala is also quite a summer resort. Comfortable hotels have been built upon its shores, and hundreds of people from Guadalajara and surrounding country spend the summers there.

Other lakes, among the numerous bodies of fresh water in the State, are Magdalena, or San Juanito, Mexcaltitlan, Cajijitlan, Tizapanito, Zapotlan and Quitopan. The coast line is about 500 kilometers (311 miles) long, and has few natural harbors, Chamela being the best.

Sugar is one of the leading products, and the cultivation of cotton could be greatly increased, the native product at present not being sufficient to supply the needs of the cotton industry, which has developed to such an extent in Mexico. Cotton planters would, therefore, be sure to find in the Republic an excellent home market for their product. The lowlands on the coast are hot, and on them thrive a great variety of tropical and sub-tropical products, while the climate, invigorated by the sea breeze, is not as enervating as that of the eastern coast of Mexico. Cedar, pine, oak, and other valuable trees are found in the mountains, and cabinet woods also abound.

Maize, barley, beans, oats, olives, onions, potatoes, and wheat in higher regions, grow with great abundance, some producing two crops through the State, so that one thousand feet or more below the wheat belt, a year. The fruits are numerous—dates, figs, grapes, lemons, limes, and oranges being celebrated; these grow in the wonderful *barrancas* cutting

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San Francisco Street, Guadalajara, State of Jalisco.

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but within literally a stone's thrown of it, are found coffee, tobacco and tropical fruits. Eastern Jalisco has been called the granary of Mexico. Cattle are being cultivated with greater ambition, and the breed is improving with the importation of blooded bulls from abroad.

The mineral resources of the State are considerable. The principal producing properties are silver, gold, tin, copper and zinc, with iron, lead and cinnabar known to exist. The best-known mining districts are: Etzatlan, to the northwest of Guadalajara; Ameca, just south of the above; Autlan, southwest of Guadalajara; Ayutla, in the same neighborhood, and Hostotipaquillo, in the northern part of the State near the Santiago River.

In addition to the industries connected with agriculture and mining, Jalisco is developing into a manufacturing State of notable proportions. In Guadalajara are cotton mills, a flour mill, a tannery, a shoe factory and tile works; many articles for local consumption are also manufactured in the State.

The Mexican Central Railway (National Railways of Mexico) has a main line running to Jalisco, extending two-thirds of the distance across the State to San Marcos and Ameca; the Southern Pacific of Mexico has a part of its line, from Guadalajara, already constructed, and this will meet the line coming down the west coast and passing through the Territory of Tepic; the National Railways has now a line opened to the south into the State of Colima to the port of Manzanillo; in the northeastern part of Jalisco the old main line of the Central (now National Railways) passes across the State through Encarnación and Lagos.

Huichol is the Indian language used when spoken.

The State is divided politically into 12 Cantones, containing 104 Municipalities, in which are 18 cities, 34 towns, 226 villages, 385 organized estates, and 6,819 hamlets.

The Cantones are: Guadalajara, Lagos, La Barca, Sayula, Ameca, Autlan, Colotlan, Ciudad Guzman, Mascota, Teocaltiche, Ahualulco and Jocotepec.

Guadalajara, 613 kilometers (381 miles) by rail from Mexico City, is the capital and principal city of the State, being the second largest in the Republic. It contains fine government buildings, a large cathedral, the largest theater in the Republic, banks, a chamber of commerce, electric trolleys and lights with power, and in many ways is rightly considered the most modern and progressive city in Mexico. The public parks are the pride of the people.

MEXICO.

Mexico became a State of the Federation October 4, 1824, and its constitution was promulgated October 1, 1870.

Boundary, Area, Population.—The State is bounded on the north by the State of Hidalgo; on the east by the States of Tlaxcala and Puebla; on the south by the States of Morelos and Guerrero; on the west by the State of Michoacan; and on the northwest by the State of Querétaro. The Federal District, which of course limits to some extent the area of the State of Mexico, is so nearly a part of the latter that the lines of contact are not mentioned in defining the boundaries of the State. Its area is 23,185 square kilometers (8,949 square miles). Its population (1910) is 975,019, of whom 482,287 are males and 492,732 are females.

The State occupies one of the most beautiful regions on earth. The northern portion is a plain, intersected by small foothills and covered with salt lakes and marshy lands; this is the land of the cactus and agave. The eastern part is occupied by the Popocatepetl range, fertile lands, snow-

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covered peaks, smoking volcanoes, and the celebrated valley of Texcoco. The center is the region of forests and mountains, the valley of Toluca occupying the highest plateau. The Sierra Nevada mountain range, with its snow-covered peak of Popocatepetl, the highest in the country, rising 5,410 meters (17,748 feet) above sea level, traverses the eastern section; to the north is Iztaccihuatl, 4,900 meters (16,076 feet) in height; and to the south runs the Ajusco range, which marks the limit of the valley of Mexico; its highest peak is Ajusco. The Sierra de Guadelupe lies north of the Federal District, and to the northwest of the Ajusco range is the snow-capped volcano of Toluca, 4,600 meters (15,091 feet) above the level of the sea, in whose crater are two lakes of potable water. The valley of Toluca is a beautiful spot, more than 2,000 meters (6,562 feet) above sea level, being situated on the highest plateau of the Republic and embracing within its limits the Federal District and the City of Mexico, capital of the Republic.

Climatological conditions vary according to altitudes. In the valley of Toluca, 3,176 meters (10,420 feet) above sea level, it is exceedingly cold, while the valley of Mexico enjoys a temperate and healthy climate, although it is somewhat variable. The rainfall is uncertain—scarce at times and then again falling abundantly. Frost is not frequent.

The chief river is the Lerma, which passes through the States of Querétaro, Michoacan and Guanajuato; this is the most important stream of the country, measuring 452 kilometers (281 miles) from its source to its mouth in Lake Chapala. Next in importance is the Cuautitlan, flowing into the Tula River. The San Geronimo River and the Chontalcuatlan River originate in the melting snows of the Nevado de Toluca and join to form the Amacusas River in the State of Morelos. The valley of Mexico contains five important lakes, three of which lie wholly within its boundaries, viz.: Zumpango, San Cristobal, and Xaltocan, while Texcoco and Chalco extend into other States. The Lerma Lagoon lies wholly within the State. There are several cataracts in the State of Mexico, one named Niagara; the water power from them is being utilized in many cases.

The agricultural products are abundant; all the cereals and the maguey plant are cultivated, and there are extensive plantations of rice, coffee, sugar cane, linseed, tobacco, beans and peas. Tropical fruits and the grape are prolific in the warmer regions. Dairy farming is successful. Stock raising is a source of wealth—sheep, cattle, hogs, goats, horses, asses and mules being raised.

The State has always been noted for its production of precious metals—gold, silver, copper, lead, iron, tin, antimony and cinnabar being known. The most important mining districts in the State are: El Oro, about 110 miles (177 kilometers) northwest of the City of Mexico, at an altitude of 9,500 feet (2,895 meters), which has a greater output of gold than any other similar district in the Republic. The boundary line between the States of Mexico and Michoacan passes through the camp. Sultepec, in the southwestern portion of the State, and including Zacualptan, to the southeast of it, is a large mining section producing gold, silver and other metals. Temascaltepec, in the extreme southwest of the State, produces gold and silver, with antimony ores.

The leading industries, apart from those connected with mining, are the manufacture of cotton and woolen goods, brick, cheese and butter, wines, glassware, pottery, and local supplies.

The National Railways of Mexico has a main line from the City of Mexico through Lerma, Toluca and Ixlahuaca, with a branch to El Salto; there are lines also to Amanalco from Toluca, and to Tenango; a line runs also to Irolo. The Mexican Railway extends to Teotihuacan, Otumba

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and Irolo. The Interoceanic Railway has two branches, one to Puebla on the north and the other to the south through Chalco and Otumba to Morelos. There are also special lines serving the mining properties of large estates.

Matlatzinga, Mazahua and Otomí are the Indian dialects spoken.

The State is divided politically into 16 Districts containing 114 Municipalities with 9 cities, 31 towns, 596 villages, 368 organized estates and 791 hamlets.

The Districts are: Toluca, Cuautitlan, Chalco, El Oro de Hidalgo, Ixtlahuaca, Jilotepec, Lerma, Otumba, Sultepec, Temascaltepec, Tenancingo, Tenango, Texcoco, Tlalnepantla, Valle de Bravo, Zumpango.

The principal city and capital of the State is Toluca (de Lerdo), 900 feet (274 meters) higher than the City of Mexico, and situated 73 kilometers (45 miles) from it. It is an important commercial center, and near large and thriving haciendas. It is well drained and healthy, but cold in winter. Many of the public buildings are new, and are fine examples of municipal architecture. There is a good public library, three new hospitals, a scientific and literary institute, a trade school for boys and a normal trade school for girls, and an academy of music. There are tramcars, telephones, and electric lights. The city is in touch with the rest of the Republic by the Federal telegraph system.

MICHOACAN.

Michoacan became a State of the Federation October 4, 1824, and its constitution was promulgated February 1, 1858.

Boundary, Area, Population.—The State is bounded on the north by the State of Guanajuato; on the northeast by the State of Querétaro; on the east by the State of Mexico; on the south by the State of Guerrero and the Pacific Ocean; on the west by the States of Colima and Jalisco. Its area is 58,694 square kilometers (22,656 square miles). Its population (1910) is 991,649, of whom 488,244 are males, and 503,405 are females.

The general character of the land is mountainous, and it is immensely rich in vegetation. The coast line, which is generally low, measures 163 kilometers (101 miles) in extent. The Sierra Madre Mountains traverse the State, sloping down, in the southern part, to the basin of the Balsas River, and continuing their course on the farther bank of the river as the Sierra Coalcoman. Some of the peaks are remarkable; such is the volcano Jorullo thrown up from a level plain about the middle of the eighteenth century.

The climate of the State is varied, depending upon altitude. The heat is great along the coast and in the foothill valleys of the Sierra Madre, but higher, toward the central tableland, the region is temperate and even cold.

The principal rivers are the Lerma, which irrigates the upper region of the State, running east and west, and, after receiving the waters of several affluents, finally empties into Lake Chapala; the Duero, flowing from southwest to northwest, and the Balsas, called also Zacatula and Atoyac, which flows from east to west, and has several tributaries. The Lake of Chapala is on the Jalisco boundary, one-sixth of it belonging to the State of Michoacan. In the same region are the smaller lakes of Tacáscuaro and Magdalena. The Lake of Pátzcuaro contains five small islands, three of which are inhabited. It has no known outlet, is about 20 miles long by 10 broad (32 kilometers by 16 kilometers), and lies at an altitude of 7,000 feet (2,133 meters). Other bodies of water lying within the State limits are Lake Cuitzéo, the lagoon of Zirahuen, and of

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PALACE OF JUSTICE, MORELIA, STATE OF MICHOACAN.

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Zipimeo. There are numerous waterfalls along the river courses, and many mineral springs exist in the country.

The agricultural potentialities of the State are great, and though the present methods and appliances employed are primitive, Michoacan occupies a leading position in the Republic for its yield of staple cereals, and it grows also canary seed, sesame and linseed, coffee, vanilla, rubber, tobacco, sugar cane, fruits of all kinds and cabinet woods. The cattle industry is a flourishing one.

Michoacan is one of the foremost mining States in the Republic. Gold, silver, copper, iron, cinnabar, lead, sulphur, tin, and coal are found. Building material of stone is likewise known.

The principal mining centers are Tlalpujahua (gold and silver), Angangueo (silver), Inguaran (copper), and Coalcoman (iron). Tlalpujahua has the famous old mines called Borda and Coronas; the region lies close to El Oro (State of Mexico), and has been worked even before 1743, when they are said to have yielded in silver alone 33 million *pesos*. The most important mine today, and indeed one of the richest in the Republic, is Dos Estrellas, situated close to the boundary line and part of the El Oro district; it yields both gold and silver. Angangueo district is further to the south, but still in the northeast part of the State, and furnishes chiefly silver. Inguaran is in the southern portion of the State, not far from the Balsas River; the mines are low grade copper. Coalcoman is in the extreme west of the State, in the Sierra Madre mountains, but the region is but little explored; besides the iron deposits known to exist, gold, silver, copper and lead are reported, and an iron mountain, even greater than that in Durango, is mentioned.

The manufacturing activities are confined mainly to the production of cotton and silk shawls, cotton and woolen goods, palm hats, lace and embroideries, sugar-cane products, pulque, mescal, cheese, wax matches, and beer. Sericulture and the culture of olive trees and grapevines are being introduced. The lack of railway facilities is at present a hindrance to the development of anything but native and local indutries.

Michoacan has no port of entry.

The National Railways of Mexico has a line from the City of Mexico through Morelia to Uruapan; and from the Central (National Railways), where it crosses the northern section of the State to Guadalajara, a branch runs from Yurécuaro through Zamora to Los Reyes; these branches will be united. The Pacific Railway crosses the State in the extreme northeast, and has a branch from Maravatío to Angangueo.

Indian languages recognized are Mazahua, Mexican, Otomí, Tarasco and Zoque.

The State is divided politically into 16 Districts with 78 Municipalities, containing 10 cities, 25 towns, 257 villages, 2,746 hamlets and 4 colonies.

The Districts are: Morelia, Apatzingan, Ario de Rosales, Coalcoman, Huetamo, Jiquilpan, La Piedad, Maravatío, Pátzcuaro, Puruándiro, Salazar, Tacámbaro, Uruapan, Zamora, Zinapécuaro, Zitácuaro.

Morelia is the capital and chief city of the State of Michoacan, situated 365 kilometers (227 miles) from Mexico City. It is one of the centers of the Mexican revolution for independence, and is moreover distinguished as the birthplace of the national hero Morelos, for whom it was finally named. The cathedral is considered the finest in the Republic. There are also a number of fine public buildings, an aqueduct, a girls' academy, the San Nicolas college, the oldest collegiate relic in Mexico and the second of its kind in the new world, a public library and a museum. The city has a tramcar service, telephones, electric lights and banks. Zamora, northwest of the capital and not far from Lake Chapala, is of next importance.

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CATHEDRAL AT MORELIA, STATE OF MICHOACAN.

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MORELOS.

Morelos became a State of the Federation April 7, 1869, and its constitution was promulgated June 20, 1870.

Boundary, Area, Population.—The State is bounded on the north by the Federal District and the State of Mexico; on the east by the State of Puebla; on the south by the State of Guerrero; and on the west by the State of Mexico. Its area is 7,082 square kilometers (2,734 square miles). Its population (1910) is 179,814, of whom 89,557 are males and 90,257 are females.

The topographical conditions are varied, embracing high mountain ranges, snow-capped volcanoes, beautiful valleys, and deep ravines. The northern part is the mountainous section. There rises the lofty Sierra de Ajusco, while the Huitzilac, Tepoctlán, and Santo Domingo ranges extend from west to east until they meet the Tlayacapon mountains. The highest peaks in these ranges are Yepac, Ololuica, and Ocotecatl. In the northeast are the Popocatepetl and the Ixtaccihuatl ranges, while other mountain chains cross the State in all directions.

The climate is hot in the southern and central regions, cold in the northern or mountainous portions, and temperate on the mountain slopes. Rainfall is moderate throughout the territory with the exception of the slopes of the northern mountains, where it is very abundant. Frosts are of infrequent occurrence.

The State may be said to belong to the basin of the Amacusac River, which traverses it from west to east, and empties finally into the Balsas River. This river is formed by the junction of the San Gerónimo and Chontalcuallán and receives a large number of tributary streams, among them the Chalma, Alpuyeca, Tepalcapa, Yautepec, Jojutla, Tlaquiltenango, and Cuautla rivers. The principal lake is Lake Tequesquiten, which occupies the site of the old town bearing the same name, and which, by reason of a subsidence of the ground, due to frequent inundations, was engulfed about half a century ago by the waters used in irrigating the land. The church spire may yet be seen in the middle of the lake. Others are the Miacatlán and Hueyapán lakes. Mineral hot springs abound.

From an agricultural standpoint, Morelos is one of the richest States in Mexico. The principal products are sugar cane, rice, corn, coffee, wheat, and garden vegetables. The first cane plantation and sugar mill in Mexico was established by Cortes in Tlaltenango, and since that time its culture has advanced steadily and continuously, it being now the leading article of production of the State of Morelos. In addition to sugar, rice, and coffee, the chief cereals are grown. Stock raising is not as advanced as it should be. The forest resources of the State are considerable.

Mining occupies an inferior position in the State, although denouncements have been made of claims of gold, silver, copper, lead, cinnabar and coal. Deposits of gypsum and clay occur, and quarries of white and veined marble are found; building stone, lithographic stone, and rose garnet are also reported.

Morelos is an important mercantile center, not only on account of its proximity to the Federal District, but also by reason of its immense sugar interests. Manufacturing, however, is confined to only a few neighborhoods. In Cuernavaca is the center of a highly developed pottery industry, which has made an international reputation for itself.

The National Railways of Mexico enter the State by its main line from the City of Mexico to Iguala and Balsas (Guerrero), passing through Cuernavaca. The Interoceanic Railway passes across the State from Mexico to Puente de Ixtla through Cuautla.

Mexican and Otomí are the indigenous Indian languages.

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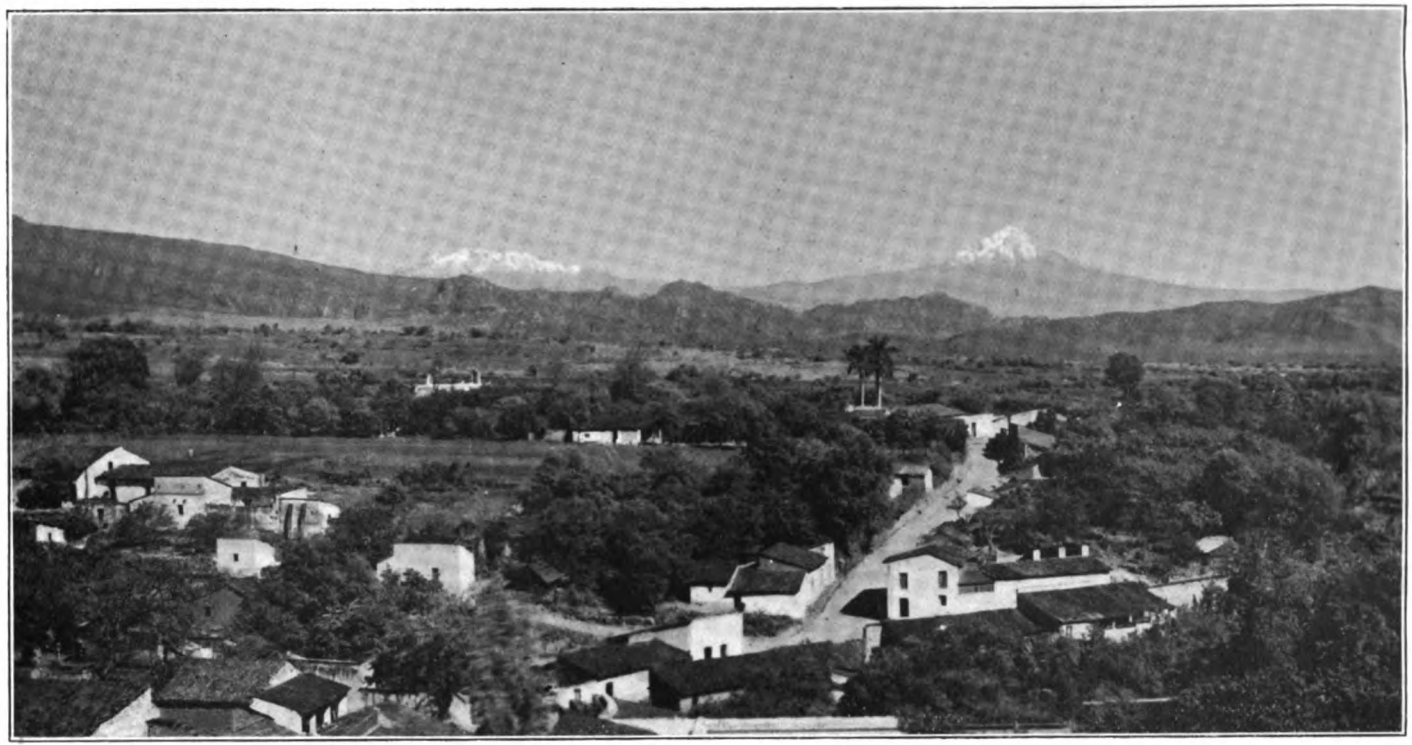

VIEW FROM THE PALACE OF CORTES IN THE CITY OF CUERNAVACA, STATE OF MORELOS, TOWARD IXTACCIHUATL (LEFT) AND POPOCATEPETL (RIGHT).

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The State is divided politically into 6 Districts, with 26 Municipalities, containing 6 cities, 13 towns, 106 villages, 35 organized estates, 39 hamlets and 3 colonies.

The Districts are: Cuernavaca, Morelos, Jojutla, Jonacatepec, Tetecala, Yautepec.

Cuernavaca is the chief city and the capital of the State. It is 76 kilometers (47 miles) from the City of Mexico. It is both a health resort and a commercial center, possessing very fine public buildings, among them the palace of Cortes, an observatory, a public library, a cathedral, bnaks, good parks, trams, telephones and telegraphs. Cuautla is another good health resort of the State, best known on account of its hot sulphur springs.

NUEVO LEON.

Nuevo Leon became a State of the Federation May 7, 1824, and its constitution was promulgated October 4, 1857, and revised in 1876.

Boundary, Area, Population.—The State is bounded on the north by the State of Coahuila; on the northeast by the United States (Texas) and the State of Tamaulipas; on the east by the State of Tamaulipas; on the south and southwest by the State of San Luis Potosi; and on the west by the State of Coahuila. Its area is 61,343 square kilometers (23,679 square miles). Its population (1910) is 368,929, of whom 184,651 are males and 184,278 are females.

The Sierra Madre Mountains traverse the State at a mean elevation of 1,676 meters (5,498 feet) above sea level for a distance of 252 kilometers (157 miles). Among its numerous peaks, the Potosi is the principal, its summit being covered with snow during part of the summer. These mountains come to an abrupt end in the northern part of the State; here another chain starts whose highest peaks are known as the Silla, Mitra, Topo, and Salinas. At the latter point the chain is bifurcated, forming two new ranges, viz.: the Sierra de Gomas on the north and the Sierra de Picacho on the south.

The climate varies according to the altitude, but it is generally temperate and healthy, the extreme of heat being found in the north and east where the land is low, while on the highlands of the south a moderate temperature prevails, varying in the Sierra Madre Mountains according to the altitude. The rainfall is variable, and winds come in general from the east and northeast.

Twelve rivers and many smaller streams irrigate the State, besides numberless brooks. None of these water courses, however, are navigable. The principal river is the Salado, abounding in fishes and fine pearl oysters. It receives the waters of many tributaries and flows from west to east, emptying in the Rio Bravo. The Santa Catarina, the Ramos, the Pilón, the Rio Grande de San Juan, the Potosi, the Hualahuises, and Pablillo rivers follow in the order mentioned. There are also two lagoons, but no lakes. Among the numerous mineral springs are the Topo Chico, near the city of Monterrey, San Ignacio, near Linares, Potrero Prieto, near Galeana.

The agricultural production is considerable, consisting of most of the cereals, fruits, and vegetables. Cattle raising is one of the greatest sources of wealth in the State—goats, sheep, beef cattle, horses, hogs, asses and mules being bred.

In the State are important lead and zinc mines, and some silver also is obtained. The important mining districts are Sabinas Hidalgo, Vallecillo, Villaldama. Sabinas Hidalgo is directly nerth of Monterrey, and produces silver-lead ore. Vallecillo is even further from the capital, the ore being silver, lead and zinc. Villaldama is west of Sabinas and about

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60 miles (96 kilometers) from Monterrey; lead with some iron, lead-silver and zinc are the ores mined.

The industries are altogether those connected with agriculture and the smelting works in Monterrey, but local plants of long standing turn out blankets and leather work celebrated throughout the Republic.

The National Railways of Mexico (as the Mexican National) cross the State from Nuevo Laredo on the way to Mexico City; it has also an important division to the port of Matamoros in the State of Tamaulipas; the Central (National Railways) has a line across the State to Tampico (Tamaulipas), and the International Railroad has a division between Reata (Coahuila) to Monterrey. There are also local lines to Linares, Topo Chico and San Pedro.

The State is divided politically into 49 Municipalities, containing 6 cities, 42 towns, 5 villages, 513 organized estates, and 1,956 hamlets.

The capital and chief city is Monterrey, 975 kilometers (606 miles) from the City of Mexico. It is sometimes called the Chicago of Mexico, on account of its progress and industrial activity. There is excellent sewage and water system, electric trolley and light service, with new public buildings, banks, and thoroughly equipped smelters. In addition, there are breweries, ice factories, flour mills, and other manufacturing plants. The city is a great railroad center, and it is said that its tonnage is second only to that of the City of Mexico.

OAXACA.

Oaxaca became a State of the Federation January 31, 1824, and its constitution was promulgated September 15, 1851.

Boundary, Area, Population.—The State is bounded on the north by the States of Puebla and Veracruz; on the east by the State of Chiapas; on the south by the Pacific Ocean; and on the west by the State of Guerrero. Its area is 91,664 square kilometers (35,383 square miles). Its population (1910) is 1,041,035, of whom 510,441 are males and 530,594 are females.

Oaxaca occupies a beautiful and fertile region, irrigated by a number of rivers and lesser streams which traverse the numerous valleys. The Sierra Madre Mountains cross the whole State, their ramifications extending throughout the territory, and forming such valleys as the Nochitlán or Mixteco, 2,111 meters (about 6,000 feet) above sea level. The maritime range, called Sierra del Sur, is composed of high mountains whose slopes are covered by virgin forests. The Zempoaltepec is the starting point of the several ramifications of the Sierra Madre. The beautiful valley of Oaxaca or Antequera occupies the greater part of the central region. The Isthmus of Tehuantepec is traversed by the Tarifa and Chimalpa mountains.

The climate is generally hot on the seacoast and lowlands adjacent to the State of Veracruz, temperate in the valley of Oaxaca and on the mountain slopes, and cold in the higher altitudes and throughout almost the whole region of the Mixteca Alta. Rainfall is moderate in the State and frosts are of infrequent occurrence.

The chief rivers of the northern watershed are the Coatzacoalcos, known also as El Corte, which flows from the State of Oaxaca into the State of Veracruz and falls into the Gulf of Mexico at Puerto Mexico (Coatzacoalcos); the Choapan, which is one of the streams that go to form the river known as the San Juan, in the State of Veracruz; and the Quiotepec, which, in the State of Veracruz, becomes the Papaloapam. The rivers of the southern watershed are the Arenas, on the boundary between Oaxaca and Chiapas, the Ostuta, the Xocoapa, the Estacada, the

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Juchitan, the Tehuantepac, the Mecaltepec, the Copalita, the Verde with its tributary the Peñoles, and the Ometepec, forming the boundary between Oaxaca and Guerrero. Many of these streams can scarcely be called rivers, on account of their short courses. The principal lakes are the Superior and the Inferior, really lagoons, as they are insets from the Pacific Ocean. There are other lagoons of the same character, but smaller. Several mineral springs are known, but little visited.

Few of the States of the Republic possess greater natural resources, but so far they are only slightly developed. Between the tropical coastal plains and the cooler inland regions almost every variety of timber is found, while coffee, indigo, vanilla, cochineal, cacao, rice, cotton, sugar-cane and fibrous plants are all found as natural products. The State government encourages agricultural enterprise, and it has demonstrated that the staples like maize, rice and sugar-cane are increasing in value. The celebrated tobacco district of *El Valle Nacional* is in Oaxaca, and here some of the best tobacco of the Republic is grown. Oaxaca is claimed by the Indians to be the original home of the *cochineal,* the insect from which comes the wonderful dye that so distinguished the *sarapes* and other native cloths so admired by the conquerors.

The State is rich in mineral resources, but no persistent effort has been made to develop them. The principal minerals found are gold, silver, iron, lead, coal, antimony, cinnabar and petroleum. The principal mining areas are as follows: Sierra Juarez range has the mines of Ixtlan, north and somewhat east of Oaxaca City about 80 kilometers (50 miles), producing both gold and silver; the Tlacolula district, 29 kilometers (18 miles) east of Oaxaca, showing abundance of both gold and silver; Taviche is a promising camp near Ocotlan, southeast of Oaxaca, with gold and silver; Taviche has been rapidly developed during recent years, although some of the old mines date back to the colonial times; San Jose, Totolapam, Ocotlan, Zimatlan, San Pedro, Lachigalla, Ejutla and Poblete are near each other and about 120 kilometers (75 miles) south and west of Oaxaca City. Peras, southeast of Oaxaca City, shows gold, as does Etla, 19 kilometers (12 miles) north of the capital. Tlaxiaco, about 160 kilometers (100 miles) northwest of Oaxaca City, is a region showing coal and iron. Lead is combined with silver in mines in the Tehuantepec district.

The industries of the State are largely agricultural and mineral, but there are local manufactures of cotton and woolen cloth, furniture, pottery, candles, soap, and tobacco. The capital itself is celebrated for the peculiarly fine *sarapes* made there by the Indians on primitive domestic looms.

The Mexican Southern (National Railways of Mexico) is one of the two railways to enter the State. It comes from the north to Oaxaca City; there are local lines from here to Zimatlan and San Pablo, and to Ejutla. The Tehuantepec National Railway crosses the State from the port of Salina Cruz on its way to Puerto Mexico. A survey is completed for a line to run north from Salina Cruz to reach the City of Oaxaca.

Oaxaca is one of the maritime States of Mexico bordering on the Pacific Ocean, and has a coast line of 410 kilometers (255 miles). These shores are low and sandy. The natural ports are Chacahua, Puerto Escondido, Puerto Angel, San Augustin Huatules, San Diego, La Ventosa, and Salina Cruz. Salina Cruz has a deep harbor, where the largest vessels may safely anchor. Puerto Angel is a sheltered port, quite deep, but too narrow to permit the passage of large vessels. These are the only ports open to foreign and coastwise traffic. There are numberless bays, bars, roads, and a few islands. The Gulf of Tehuantepec is one of the most important in the Republic, being about 210 kilometers (130 miles) in length from east-southeast to west-northwest, and 55 kilometers (34 miles) from north to south.

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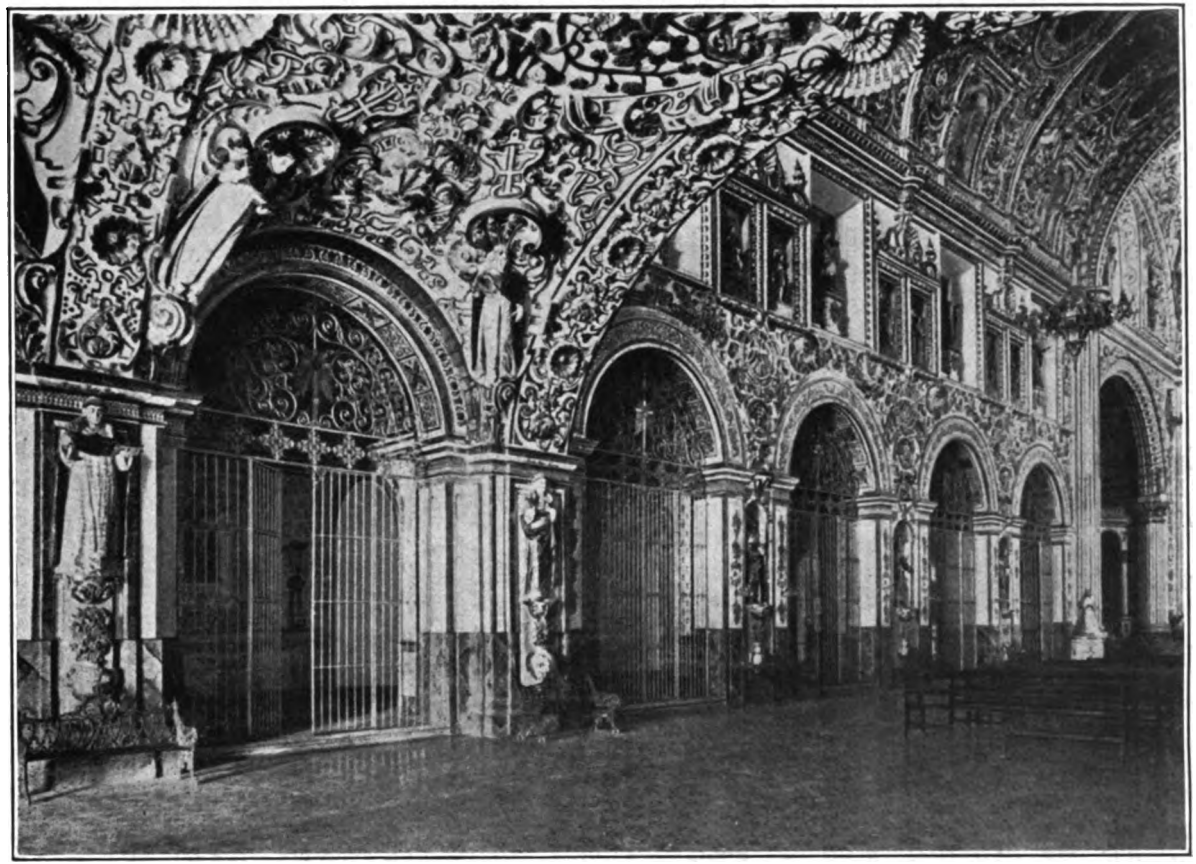

CHURCH OF SANTO DOMINGO, OAXACA.

This interior is considered one of the most splendid in Mexico on account of its heavily gilded and polychrome sculpture.

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About 15 Indian families with many branches are found in Oaxaca, and their languages are spoken in their homes. Amusgo, Cuicateco, Cohita, Chinanteco, Chocho, Chontal, Huave, Mazateco, Mexicano, Mixe, Mixteco, Popoloco, Trique, Zapoteco, and Zoque are the names given by Peñafiel, although different authorities supply other classifications.

The State is divided politically into 27 Districts, with 1,164 Municipalities, containing 5 cities, 36 towns, 1,132 villages, 168 organized estates and 796 hamlets.

The Districts are: Del Centro, Coixtlahuaca, Cuicatlan, Choapan. Eiutla, Etla, Huaiuapan, Ixtlan, Jamiltepec, Juchitan, Iuquila, Juxtlahuaca, Miahuatlan, Nochixtlan, Octolan, Pochutla, Putla, Silacayoapan, Tehuantepec, Teotitlan, Teposculula, Tlacolula, Tlaxiaco, Tuxtepec, Villa Alta, Yautepec, Zimatlan.

Oaxaca the city is the capital of the State of the same name, and one of the most interesting cities of the Republic. It is 464 kilometers (288 miles) from Mexico City, and the same distance from Veracruz. It was the early home of both President Porfirio Diaz and of the patriot and national hero Benito Juarez. Its age makes the city very attractive, but it is quite modern in many ways, possessing tram-cars, electric lights, telephones, and other factors of comfort. Some of the best-known mines of the State are in the neighborhood. Another feature connected with Oaxaca is the fact that from the city the excursion is made, about 40 kilometers (25 miles) to the southeast, to the ruins of Mitla, some of the best-preserved prehistoric remains of all Mexico. The architectural beauties of Oaxaca must not be overlooked, and some of the public buildings are good specimens of municipal activity.

Salina Cruz, situated on the Gulf of Tehuantepec, 25 kilometers (16 miles) from the city of that name, is the Pacific terminus of the Tehuantepec National Railway; its outer harbor is formed by two breakwaters and there is an inner harbor in which steamers of deep draught can moor alongside the docks. The whole of Salina Cruz is Federal property, in which land is only rented for terms of years from the Government. Having direct connection with the interior of the Republic by means of the Tehuantepec Railway, and with eastern ports from Puerto Mexico at the northern terminus of that line, Salina Cruz is also served on the Pacific Ocean by steamers to national and foreign ports.

The *Compañia Naviera del Pacifico*, a Mexican company with a fleet of steamers running regularly between Salina Cruz and Guaymas.

Pacific Mail Steamship Company, regular schedule between Panama and San Francisco, with stops at most Pacific intermediate ports.

Canadian-Mexican Pacific Company, regular schedule between Vancouver and Victoria, B. C., and Salina Cruz.

American-Hawaiian Steamship Company, regular schedule to San Francisco, and the Hawaiian Islands, and also to San Diego, San Francisco and Puget Sound.

Kosmos Line, regular stops at Salina Cruz on the route between Hamburg and all west (Pacific) coast ports of South, Central and North America.

Salvador Railway Company, operating a steamer regularly between Salina Cruz and Acajutla, Salvador, arranging to take passengers also for ports in Guatemala, Salvador and Honduras.

Toyo Kisen Kaisha (Japan Steamship Company) operates a regular schedule between Yokohama, San Diego and San Francisco, Salina Cruz, and Valparaiso, Chile, Iquiqui, and Callao, Peru.

Puerto Angel, a port open to both coasting and foreign trade, lies on a broad and open bay, north of Salina Cruz, but it does not play an active part in the commerce of Oaxaca.

Puerto Menizo is a new Pacific port in the State recently opened to international commerce.

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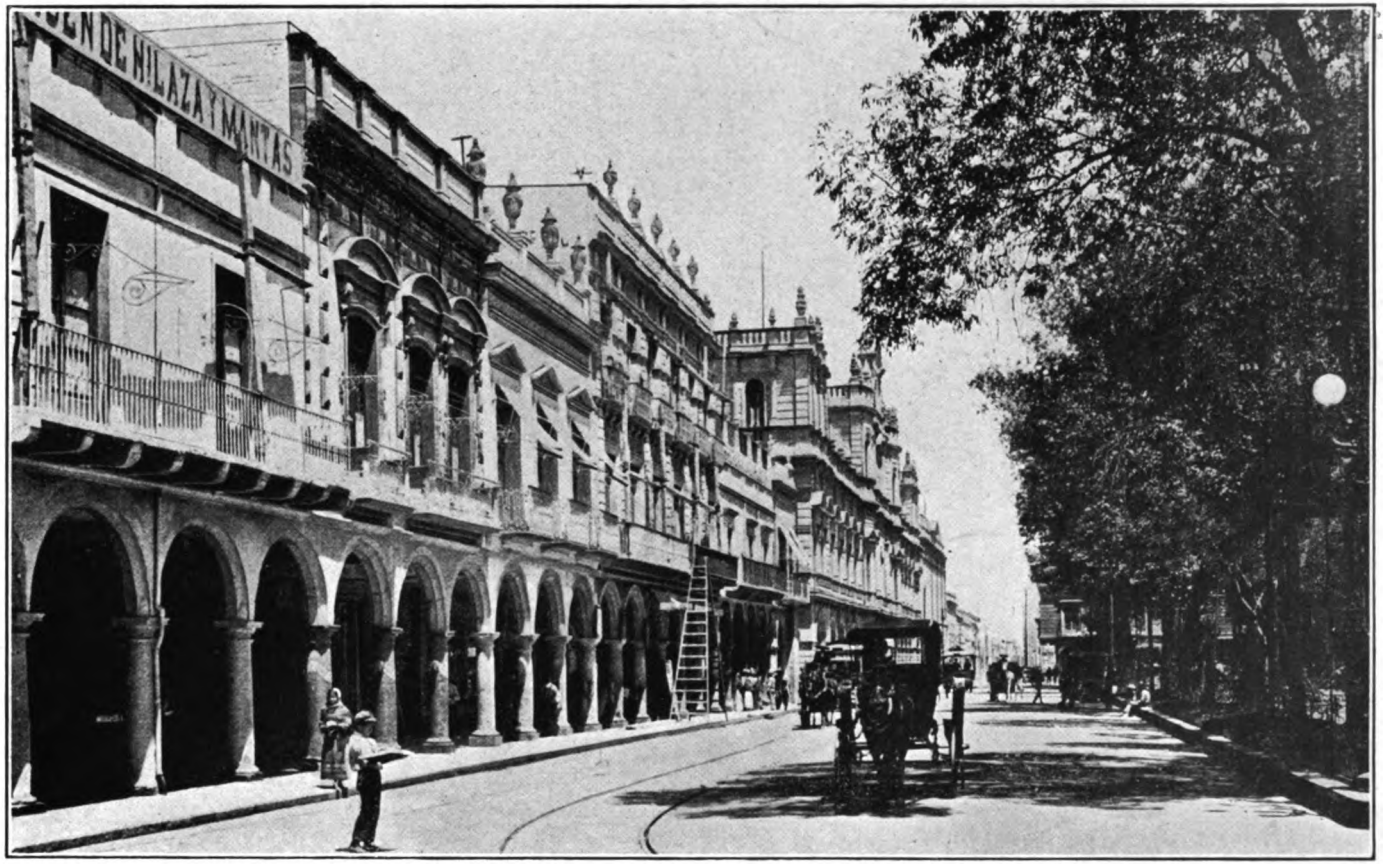

THE MUNICIPAL ARCADE, CITY OF PUEBLA.

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PUEBLA.

Puebla became a State of the Federation October 4, 1824, and its constitution was promulgated September 14, 1861, and revised February 5, 1880.

Boundary, Area, Population.—The State is bounded on the north and east by the State of Veracruz; on the south by the States of Oaxaca and Guerrero; and on the west by the States of Morelos, Hidalgo and Tlaxcala (although as a matter of fact Tlaxcala is almost surrounded by the State of Puebla). Its area is 31,616 square kilometers (12,204 square miles). Its population (1910) is 1,092,456, of whom 530,713 are males and 561,743 are females.

The general topographical aspect is mountainous, the principal peaks being Popocatepetl and Ixtaccihuatl, the volcanoes of San Andrés and Perote, and the mountain ranges of the Sierra Madre.

The climate is in general temperate, but the conditions are sub-tropical in the southern and southwestern portions of the State, and cold in the northern districts.

The chief rivers are the Atoyac, which flows through the State from north to south, passing near the State capital and joining the Mixteco in the south, forming one of the streams that make the Mezcala in the State of Guerrero; the Pantepec, rising in the northern part of the State and flowing into Veracruz, where it joins the Vinasco to form the Tuxpan; the Cazones or San Marcos, also flowing into Veracruz; the Necaxa, in the upper reaches of which are the Falls of the same name, these Falls furnishing electric power for the total supply of the City of Mexico; the Tehuacan, called in Oaxaca the Quiotepec, and merging, in Veracruz, into the Papaloapam. There are four small lakes, the Quecholac, Tlachichica, Epatlan, and Tepehualco. Several mineral springs are utilized as popular resorts.

Agriculture is the most important industry of the State. In the highlands maize, wheat, barley and the maguey flourish, while lower down, in the valleys, sugar-cane, coffee, rice, tobacco, and fruits are cultivated. All the common vegetables grow in properly selected parts of the State. Cattle raising is carried on successfully on many estates.

The principal minerals found are gold, silver, copper, lead, iron, zinc, mercury and rock salt; marble is quarried in places. Puebla is an agricultural rather than a mining State, but some areas are highly mineralized. The chief districts are Tezuitlan and Tlatlaquitepec, in the northeastern part of the State, where a copper belt is worked, with some gold and silver; San Juan de los Llanos, a copper region, close to the northern border of Tlaxcala; Tehuacan, in the southeastern portion of the State, where zinc deposits occur; Tecali, a short distance southeast of the city of Puebla, which district shows onyx marble. Coal deposits are numerous in Puebla, but the country is very broken, so that as yet they cannot be economically worked.

In addition to the industries connected with agriculture and mining, the State of Puebla has developed such manufacturing interests that it ranks among the first in the Republic. The principal factories are for the manufacture of cotton, and 35 of these, most of them in the city of Puebla, are in operation. Others are in Atlixco, Cholula, and nearby towns. The ancient industries of the pre-Columbian Indians have declined, but many good evidences of their early skill can still be discovered in the local shops and markets. The electric light and power station, at the Falls of Necaxa, is industrially one of the most important enterprises in the Republic. All the power for the City of Mexico is transmitted from here

The Mexican Railway has an important branch running from Apizaco (in Tlaxcala), on its main line, to the city of Puebla; this main line crosses the State, after leaving the Tlaxcalan boundary. The Interoceanic

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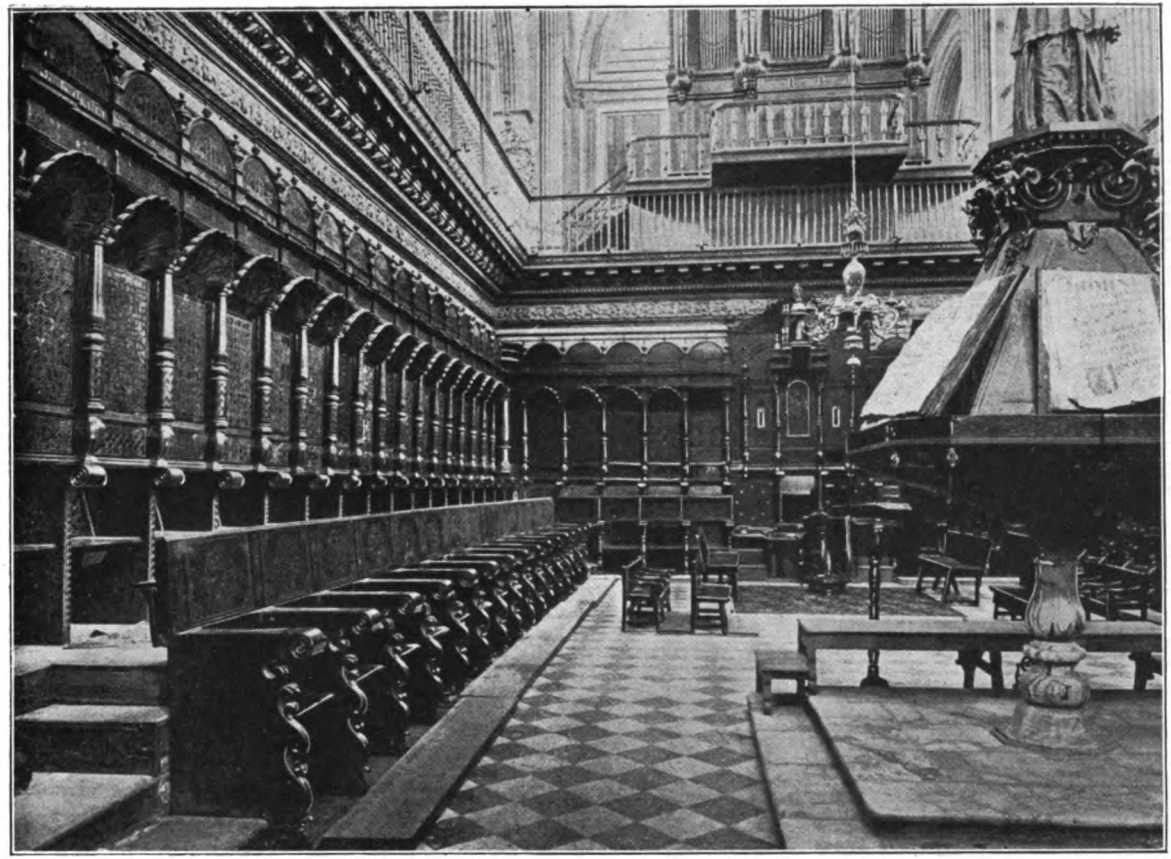

CHOIR IN THE CATHEDRAL OF PUEBLA.

Famous for its wood carvings and the lectern holding time-stained parchment books with illuminated text.

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Railway (National Railways) has a branch running from Tehuacan to Esperanza, close to the southeastern boundary of the State, where connection is made with the Mexican Railway; the main line of the Interoceanic crosses the State on its division between the National and the State capitals, and another line of the same railway passes from Tlaxcala toward the north; another division enters the State from the south. The Mexican Southern (part of the Interoceanic Railway of the National Railways system) has its main line between Puebla and Oaxaca across the State as far as San Antonio.

The native Indian languages are Mexican, Otomí, Popoloco, Tepehua and Totonaco.

The State is divided politically into 21 Districts, with 80 Municipalities, containing 15 cities, 35 towns, 582 villages, 403 organized estates, 1,647 hamlets, and 1 colony.

The Districts are: Puebla, Acatlan, Atlixco, Alatriste, Chalchicomula, Chiautla, Choluca, Huauchinango, Huejotzingo, Matamoros, San Juan de los Llanos, Tecali, Tecamachalco, Tehuacan, Tepeaca, Tepaxi, Tetela de Ocampo, Tezuitlan, Tlatlauquitepec, Zacopoaxtla, Zacatlan.

The City of Puebla, 208 kilometers (130 miles) from Mexico City, is the State capital, and the third city of importance in the Republic. During the colonial period it was a trade center between Spain and Mexico, and the seat of many highly developed industries. Today it is the commercial and distributing center of this very large and rich agricultural State, and on account of the number and size of the cotton mills in its vicinity it has been called the "Manchester of Mexico." Until recently progress had been limited by the exhaustion of the available power, but the electric supply has been increased considerably, so that notable industrial expansion is to be expected. Puebla is also called the "Rome of Mexico." Its architecture is of decided merit, its situation is very favorable, and it has the reputation of being one of the cleanest and healthiest cities in the Republic. Besides the cathedral and many churches, the city contains a State college with a fine library; and a medical school with courses in law, engineering and commerce connected with it; many schools of primary and advanced education; the renowned library (Lafragua), an academy of fine arts, and such instances of modern municipal life as a chamber of commerce, banks, several good hospitals, hotels and theaters. Electric light, telephone and power service are in use, there is a system of tram-cars, and close communication with all parts by telegraph. Glass and other factories, in addition to the textile mills mentioned, are found in Puebla, and the tiles made here are in demand throughout Mexico for structural work.

Atlixco, interesting historically and for its textile mills; San Pedro Cholula, the location of a prehistoric pyramid; and Tehuacan, famous for its mineral waters, are other towns in the State.

QUERETARO.

Querétaro became a State of the Federation January 8, 1824, and its constitution was promulgated January 18, 1869, and revised July 8, 1879.

Boundary, Area, Population.—The State is bounded on the north by the State of San Luis Potosi; on the east by the States of Hidalgo and Mexico; on the south by the State of Michoacan; and on the west by the State of Guanajuato. Its area is 11,638 square kilometers (4,492 square miles). Its population (1910) is 243,515, of whom 120,784 are males and 122,731 are females.

Querétaro is crossed by mountain chains that unite the eastern and western ramifications of the Sierra Madre, the northern portion being mountainous, while the central and southern portions are occupied by plains and valleys.

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FEDERAL PALACE, CITY OF QUERÉTARO.

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Climatic conditions vary with the altitude, but in general the climate is temperate, being hottest in the Jalpam and Toliman districts, toward the north. Rainfall is moderate.

The rivers are numerous, as the State is well watered, but only the Ayutla, the Estorax and the Moctezuma (the boundary between Querétaro and Hidalgo) are of great intensity. The (Conca) Jalpan, Galinda and others are of less importance. There are several small lakes in the State, the principal being the Cerro Grande, Conca, Sancillo and Saledon. Many mineral and thermal springs are found throughout the country.

The State of Querétaro occupies a very fertile region, producing all kinds of cereals, leguminous plants and fruits, so that agriculture is one of the principal industries. Cotton, sugar cane, and wheat are also cultivated, the latter being considered the best in the Republic. Tobacco is raised, and cattle growing is assuming important proportions.

Minerals abound throughout the State; the mines produce gold, silver, copper, lead, mercury, antimony, iron, either singly or in combination, and one district is famous for its opals. The principal mining camps are Cadereita, Mineral de los Aguas, and Toliman. Cadereita is an old mine working during colonial days, and has yielded an enormous revenue; it lies to the east and north of the capital, about 70 kilometers (44 miles), and the output is silver, gold and some lead. Mineral de las Aguas, about 16 kilometers (10 miles) northeast of the latter, is of much the same character. Toliman, north of the capital, 70 kilometers (44 miles), has, besides the usual minerals, some nickel associated with antimony and iron. Opals are found in the southeastern part of the State, but the method of working these mines is not highly developed.

Apart from the industries connected with agriculture and mining, the State has but few activities. In the capital are textile mills and local factories for the production of native articles.

Both the Central and the National Railways (National Railways of Mexico) cross the State, paralleling each other for almost the entire distance, in the southern portion; in the north there are as yet no railway lines.

Otomí and Tarasco are the Indian languages spoken.

The State is divided politically into 6 Districts, with 18 Municipalities, contain 5 cities, 6 towns, 39 villages, 135 organized estates, and 412 hamlets.

The Districts are: Querétaro, Amealco, Cadereyta, Jalpan, San Juan del Rio, Toliman.

The capital and chief city of the State is Querétaro, 269 kilometers (167 miles) north of Mexico City, is one of the most important cities, both industrially and historically, in the Republic. Here the first plans for independence were laid, and here were executed the Archduke Maximilian and his two chief generals, Miramon and Mejia, June 19, 1867. There are tram-cars, banks, telephones, and telegraphic communication with all the Republic. The principal buildings are the Federal Palace, the Government Palace (both of basalt), custom-house, cathedral, the historic "Iturbide" theater, a chamber of commerce and several hospitals. Many of the houses are very old, but the upper part of the town is more modern. Hercules, a short distance to the east of Querétaro, is noted as being the location of one of the largest textile mills in the country, with model workmen's homes.

SAN LUIS POTOSI.

San Luis Potosi became a State of the Federation January 8, 1824, and its constitution was promulgated in 1857.

Boundary, Area, Population.—The State is bounded on the north by the State of Coahuila; on the east by the States of Nuevo Leon and Tamaulipas and Veracruz; on the south by the States of Hidalgo, Querétaro.

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"La Paz" Theater, City of San Luis Potosi.

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and Guanajuato; and on the west by the States of Jalisco and Zacatecas. Its area is 62,177 square kilometers (24,000 square miles). Its population (1910) is 624,748, of whom 308,301 are males and 316,447 are females.

The State is traversed from north to south by the Sierra Madre range and is very mountainous, especially in the eastern portion. The central and western parts consist of the elevated tableland, which extends from north to south through that portion of the Mexican Republic. The greater part of this tableland is exceedingly dry, but where water can be obtained for irrigation purposes the soil proves to be fertile and productive.

The climate is mild. It varies somewhat according to the elevation, cool weather occurring in the higher altitudes during the winter months, and warm weather prevailing at all seasons of the year in the lower ones.

The chief rivers are the Santa Maria, the Tampaon, the Rio Verde and the Tamuin, which are tributaries of the Pánuco, which empties into the Gulf at Tampico. The northern part of the State is lacking in rivers, and is therefore arid and dry. The State has numerous small lakes, but none of great significance; on the other hand the waterfalls are notable, especially the Salta del Agua, near Hidalgo, in the southern part of the State, which offers a source of great power for some future industry. Mineral springs are numerous; several are noted in the southwestern part of the State near Reyes and Santa Maria del Rio, and others are located in the extreme eastern part. Salt marshes are found in the arid regions of the north.

Agriculture and stock raising are exceedingly varied. Where water is found or irrigation can be practiced, the land is very fertile, and in the eastern part of the State good crops of maize, beans, sugar cane, alfalfa, cereals, the maguey and even coffee, are grown. Stock raising is said by some to be the most important of farm industries, but, although breeds are constantly being improved, and thereby the cattle increased in value, goats are at present more abundant. The low tropical region known as *Huestaco Potosina* is famous for its rich pasturage of Para grass, and if this alone be considered it is one of the chief stock raising regions in the Republic. Cattle from the tablelands of adjoining States can be here fattened to a substantial profit.

The mineral wealth of the State is very great. In fact, for this reason it received the name "Potosi," as comparing it to the famous mines of Potosi in Bolivia, South America. Gold, silver, copper, lead, antimony, iron, manganese, mercury, zinc and sulphur, alone or in combination, are produced from many of the mines. The principal mining camps are San Pedro, Guadalcazar, Catorce, Matehuala, Santa Maria del Rio, Charcas and Ramos.

San Pedro is situated 20 kilometers (12 miles) east of the city of San Luis Potosi, and has been worked since 1575. Gold and silver, with lead, and some copper, are the minerals obtained. Guadalcazar lies 160 kilometers (100 miles) northeast of the capital, and produces silver, although at one time quicksilver was mined. Catorce, discovered in 1772, is north of the capital 110 kilometers (68 miles), chiefly silver in output. Matehuala, somewhat east of Catorce, produces gold, silver and copper. Santa Maria del Rio is south of the capital, about 60 kilometers (37 miles), and is best known for its cinnabar. Charcas, 70 kilometers (43 miles) north of the capital, may be regarded as a copper, zinc and antimony camp, but, although vanadium is also found there, the quantity is not large enough for commercial profit. Ramos, belonging to the Salinas district, is about the same distance (70 kilometers or 43 miles) northwest of the capital, and produces good quantities of silver and mercury.

The National Railway (National Railways of Mexico) crosses the State from north to south, with branches to some of the mining camps; the Central (also National Railways of Mexico) crosses the State from

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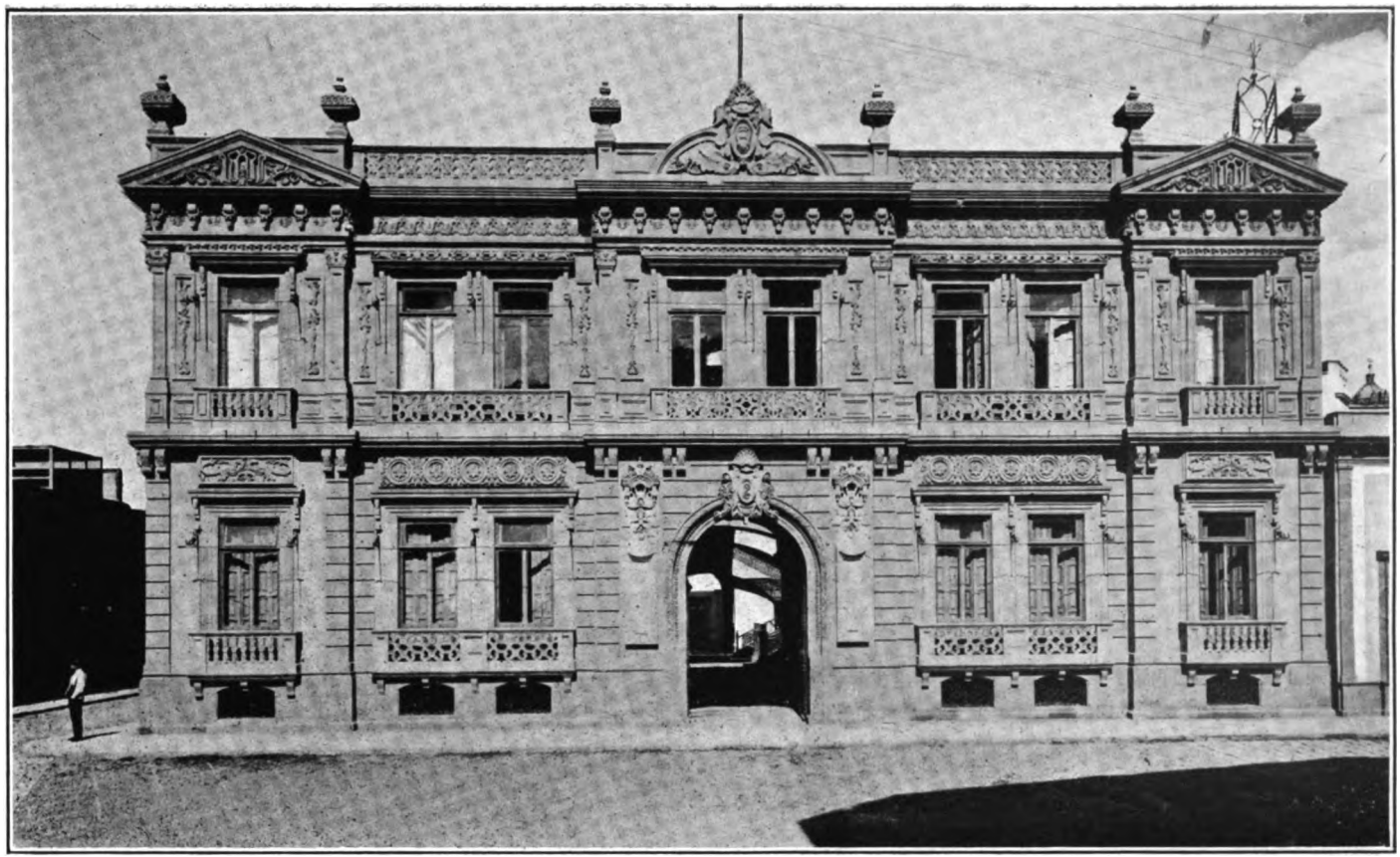

FEDERAL PALACE, CITY OF SAN LUIS POTOSI.

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west to east with its division between Aguascalientes and Tampico, having a branch from San Bartolo to Ciudad Fernandez; the Potosi and Rio Verde Railroad runs from the capital southeast 61 kilometers (38 miles) to Ahuacatal.

Chichimeca, Huaxteco, Mexicano, Otomí and Pame are the Indian languages recognized.

The State is divided politically into 13 Partidos, with 56 Municipalities, containing 19 cities, 37 towns, 9 villages, 179 organized estates, 1,471 hamlets and 1 colony.

The Partidos are: San Luis Potosi, Catorce, Cerritos, Ciudad del Maiz, Ciudad de Valles, El Venado, Guadalcazar, Hidalgo, Rio Verde, Santa Maria del Rio, Salinas, Tamazunchale, and Tancanhuitz.

The capital and chief city of the State of San Luis Potosi has the same name, and lies 526 kilometers (327 miles) north of Mexico City. It is well known for its cleanliness and healthy climate, and for its great commercial and industrial activity in factories, tanneries and mining interests. A flour mill, a nail factory, linen mill and a cold storage plant, tram-cars, telephones, electric lights, banks and railway facilities are extensive. Situated equidistant from the Gulf of Mexico and the Pacific Ocean, it has always been a great distributing point for the north-central portion of Mexico. The city contains many large and handsome buildings, among which are the Municipal Palace, the Government Palace, the La Paz theater, an art school besides the well-equipped public schools, a scientific institute and a cathedral.

SINALOA.

Sinaloa became a State of the Federation October 4, 1824, and its constitution was promulgated April 3, 1861.

Boundary, Area, Population.—The State is bounded on the north and northeast by the States of Sonora and Chihuahua; on the east by the State of Durango; on the south by the Territory of Tepic; and on the west by the Pacific Ocean and the Gulf of California. Its area is 71,380 square kilometers (27,553 square miles). Its population (1910) is 323,499, of whom 158,961 are males and 164,538 are females.

The general topographical condition of the State is mountainous, the land rising gradually from the gulf coast to the Sierra Madre Mountains, which traverse Sinaloa north and south and constitute the principal range of the section. Others are the Sanabari Mountains, the Gacopira, Aguablanca, Cosalá, Guadalupe de los Reyes, Tasajera, Navaschiste, Cuitaboa, and Tescalama. These systems embrace several peaks and plateaus.

Climatically the State may be divided into two regions: The western, or hot belt, which is also the maritime section, devoted to agriculture, and the eastern, or cold belt, which is the mountainous district, devoted to mining. Rains are abundant on the coast, and in the mountains the precipitation is excessive, frost also being of frequent occurrence. Winds are variable, the northeastern predominating.

Sinaloa is one of the best irrigated sections of the Republic, many of its rivers, such as the Fuerte and Sinaloa, being navigable. Nearly all the streams rise in the Sierra Madre and empty into the Gulf of California, the principal being the Fuerte, 670 kilometers in length (416 miles); the Sinaloa, 420 kilometers (216 miles); the Moscorite, 108 kilometers (67 miles); the Culiacán, 252 kilometers (157 miles); the Quila, 156 kilometers (77 miles); the Elota, 221 kilometers (137 miles); the Piaxtle, 203 kilometers (126 miles); the Presidio or Mazatlán, 167 kilometers (104 miles); the Chametla or Rosario, 165 kilometers (103 miles); and the Canoas or Telapán, 152 kilometers (95 miles). These rivers all have

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"Plaza de la Constitucion," Fuerte, State of Sinaloa.

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numerous tributaries, and there are in addition over 200 smaller streams traversing the State. There are no lakes, but several mineral springs exist.

Sinaloa, productively, may be divided into a western or maritime region admirably adapted for all kinds of tropical and sub-tropical agriculture, and an interior highland region at present undeveloped except as regards its mining resources. Generally speaking the agricultural industry in the State is in a backward condition, through lack of transportation facilities, the chief products being maize, beans, tobacco, sugar cane, chick-peas, with some cotton, coffee and fruits. Henequen is cultivated, but only to a slight degree, although it would appear to have a great future in the State. There are large areas of forest, and many of the hard woods as well as the better known pines are of decided commercial value, but lack of railroad facilities retards their development. Some stock is raised, and good pasture exists.

Mining is the principal industry of Sinaloa, and it is claimed that it is the richest region in Mexico. Gold, silver, copper, iron, and lead are the minerals produced. The best known mining camps are Fuerte, Sinaloa, Mocorito, Culiacan, Cosala, San Ignacio, Mazatlan, Concordia, and Rosario.

Fuerte is in the extreme north of the State, about 250 kilometers (155 miles) from Culiacan, the capital. The veins are silver bearing, principally, and there are placer mines in the district, producing gold, and copper deposits are being opened up. Sinaloa, near the town of that name, 140 kilometers (87 miles) north of Culiacan, has gold bearing veins. Mocorito, about 90 kilometers (56 miles) north of Culiacan, shows gold, silver and copper; south of the town of that name, near Palmerito, about 50 kilometers (30 miles) north of Culiacan, has silver and lead ores. Culiacan district itself has mines rich in gold and silver. Cosala, 90 kilometers (56 miles) east of Culiacan, has some of the most famous mines of the State, with gold, silver and copper. San Ignacio, about 80 kilometers (50 miles) south of Cosala, the ores are principally gold. Mazatlan, in a district averaging 50 kilometers (30 miles) northward of the seaport of that name, has rich copper deposits. Concordia, the same distance to the west, has silver with some gold. Rosario, the most southern district of the State, has both gold and silver.

The sea coast of Sinaloa measures 510 kilometers (317 miles) and is well supplied with bays and natural harbors. There are three ports of entry, named Mazatlan, Altata, and Topolobampo. Mazatlan is the chief port and the most important town of the State, containing a weather bureau, a custom house, a chamber of commerce, banks, good public buildings and a tram-car system. A good sewerage system has been installed, and harbor improvements are projected. It is the distributing center for a large interior area, and through it is carried an extensive foreign trade. Connection is made at Mazatlan with the Southern Pacific Railroad of Mexico. Steamer service for Mexican ports is supplied by the *Compañia Naviera del Pacifico*, and to other Pacific ports by the Pacific Mail Steamship Company, the Canadian-Mexican Pacific Steamship Company, and the Kosmos Line. Altata is the port for the State capital Culiacan, but its harbor facilities are not well developed. A short railway runs from here to the interior. Topolobampo, in the north of the State, a splendid natural harbor, but still needing improvement, is the Pacific terminus of the Kansas City, Mexico and Orient Railroad now under construction. Local coasting steamers touch at both these latter ports.

The *Ferrocarril Occidental*, between Culiacan and Altata, is 65 kilometers (39 miles). The Southern Pacific Railroad of Mexico crosses the State from northwest to southeast, connecting at Culiacan with the

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WATERFRONT OF THE PORT OF MAZATLAN, STATE OF SINALOA.

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above railway, and at San Blas touches the Kansas City, Mexico and Orient Railroad, which, when completed, will pass northeastward from Topolobampo through the State.

Cahita and Mayo are the native languages recognized.

The State is divided politically into 10 Districts, which are at the same time Municipalities, containing 6 cities, 9 towns, 86 villages, 68 organized estates, and 2,391 hamlets.

The Districts and Municipalities are: Culiacan, Badiraguato, Concordia, Cosala, El Fuerte, Mazatlan, Mocorito, Rosario, San Ignacio, Sinaloa.

The capital of the State, Culiacan (Rosales), situated 1,478 kilometers (918 miles) from the City of Mexico, is an important commercial center with fine public buildings, a cathedral, cotton mills and industrial establishments for the local trade.

SONORA.

Sonora became a State of the Federation October 4, 1824, and its constitution was promulgated August 23, 1877.

Boundary, Aera, Population.—The State is bounded on the north by the United States (Arizona and New Mexico); on the east by the State of Chihuahua; on the south by the State of Sinaloa; and on the west by the Gulf of California. Its area is 198,496 square kilometers (76,619 square miles), thus making it the second in size in the Republic. Its population (1910) is 262,545, of whom 135,346 are males and 127,199 are females.

In the east Sonora is traversed by the Sierra Madre Mountains, from which extend various ramifications forming beautiful valleys, ravines, and canyons. The principal of these secondary chains are the Sierras Guadalupe, San Luis, Batuco, Alamos, Antimez, Bacatete, and Prietas. The western portion is flat, and the largest valley is that of Guaymas.

The climate varies according to the altitude, being cold in the mountains, temperate on the slopes and hot and dry near the coast and in the valleys. Rainfall is moderate, and frosts occur occasionally in some districts, more especially in the mountains.

The principal rivers, all of which empty into the Gulf of California, are the Altar, also called Asunción and San Ignacio, 358 kilometers (225 miles) in length; the Yaguí, 838 kilometers (521 miles); the Mayo, 292 kilometers (182 miles); the Sonora, 410 kilometers (255 miles), and the Mátope, 234 kilometers (145 miles). There are other streams of lesser importance, and a lake, called San Rafael. A few mineral springs are known, and used by the people.

The principal agricultural products are cereals, tobacco, cotton, sugarcane, fruits, especially oranges, of which quantities are shipped to the United States, and the soil is well adapted for both sub-tropical and temperate products, but lack of transportation, and in some cases of irrigation, has kept back large sections from their natural productivity. Stock raising makes only slight progress. The timber resources are great, and have been lately considerably exploited.

Sonora is classed as one of the richest mineral regions of the Republic, or even of the world. The chief products are gold, silver, lead, copper, coal, antimony, mercury, iron, zinc, tellurium, salt and marbles. The chief districts are: Arispe, El Altar, Alamos, Hermosillo, Moctezuma, Ures, Sahuaripa and Cananea.

Arispe, about 150 kilometers (93 miles) from Hermosillo, the capital of the State, toward the northeast, is one of the older districts in Sonora; it shows some gold. El Altar is in the extreme northwest of the State, with veins of native gold, gold and silver, or silver alone; about 80 kilometers (50 miles) west of El Altar are deposits showing antimony. Alamos, 80 kilometers (50 miles) eastward, produces lead with much cop-

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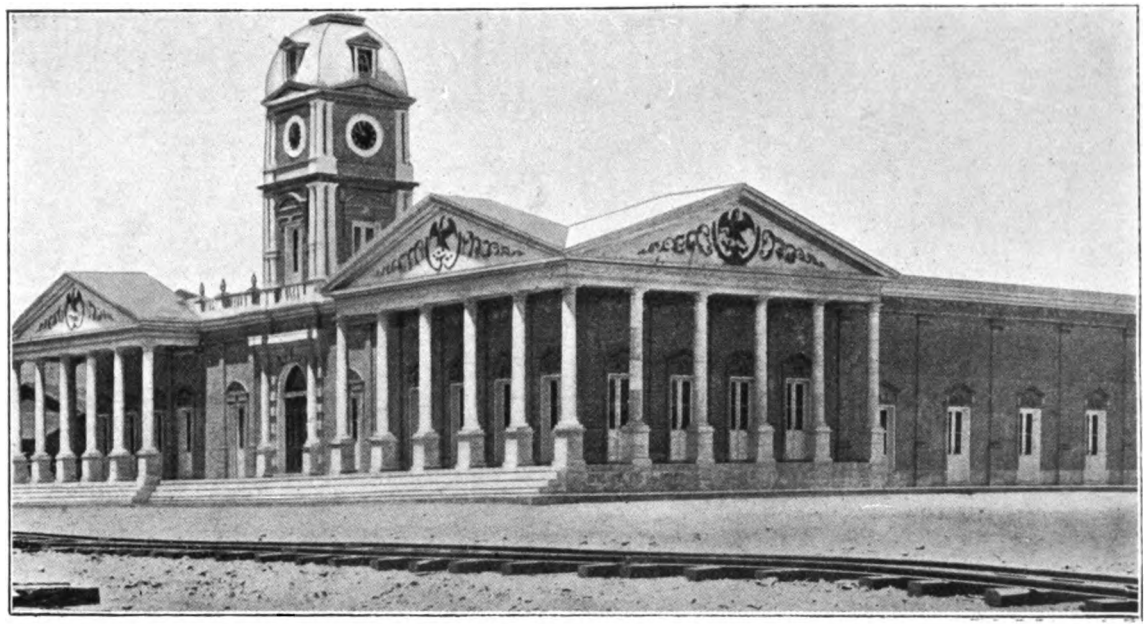

THE CUSTOM HOUSE, NOGALES, STATE OF SONORA.

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per. Hermosillo, not far from the capital, shows silver with copper in varying proportions. Moctezuma, 180 kilometers (112 miles) from Hermosillo, is a rich copper deposit. Ures, about 80 kilometers (50 miles) northeast of the capital, has a silver-bearing vein. Sahuaripa, 120 kilometers (75 miles) east of Ures, is the district where the coal deposits of the State are located. The best known of all the mines of Sonora are those near Cananea, where immense copper deposits are developed. Cananea is situated 63 kilometers (39 miles) south of Naco on the United States boundary.

The principal industries are those connected with agriculture and mining. There are, however, manufacturing establishments such as textile mills, soap and candle factories, and on the Gulf of California considerable fishing and pearl gathering is carried on.

The ports of entry of Sonora are Guaymas, on the Gulf of California, and Nogales, on the United States frontier. Guaymas is connected by rail with Hermosillo, the capital of the State, and with the west coast system of railways in the United States. The harbor is landlocked, but must be deepened to admit the largest ocean-going vessels. The companies serving Guaymas are the *Compañia Naviera del Pacifico,* and the Canadian-Mexican Pacific Steamship Company for foreign trade.

The Sonora Railway passes across the State between Guaymas and Nogales. The Cananea, Rio Yaqui and Pacific Railway enters Sonora from the frontier station of Naco. The Southern Pacific Railroad of Mexico passes southward from Guaymas into the State of Sinaloa, and has branches from the main line.

Cahita, Cahuillo, Mayo, Opata, Papago, Pima and Yaqui are the native languages spoken among the Indians.

The State is divided politically into 9 Districts with 68 Municipalities, containing 5 cities, 9 towns, 82 villages, 235 organized estates, 939 hamlets and other recognized settlements.

The Districts are: Hermosillo, Alamos, Altar, Arizpe, Guaymas, Magdalena, Moctezuma, Sahuaripa, Ures.

The capital of the State is Hermosillo, and the headquarters of the northern military zone; it lies on the Sonora River and the Sonora Railway, 296 kilometers (184 miles) south of the United States border. The city has fine public buildings, banks, tram-cars, and telegraphic connections with all points. It is 2,527 kilometers (1,700 miles) from Mexico City. The public school system of this capital is of a very high grade. Nogales is the chief frontier port for goods from the United States. The great industry here is connected with the mines, but considerable manufacturing is done.

TABASCO.

Tabasco became a State of the Federation October 4, 1824, and its constitution was promulgated September 15, 1857.

Boundary, Area, Population.—The State is bounded on the north by the Gulf of Mexico and the State of Campeche; on the east by the State of Campeche and the Republic of Guatemala; on the south by the State of Chiapas; and the west by the State of Veracruz. Its area is 26,094 square kilometers (10,072 square miles). Its population (1910) is 183,708. of whom 90,545 are males, and 93,254 are females.

On the Gulf the coast line of the State extends for 190 kilometers (118 miles), and is now and healthful, the natural depression of the soil forming several lakes. There are no capes, bays, or sheltered harbors along the coast, but vessels find anchorage in the mouths of the rivers, called bars, the principal of which are the San Pedro and San Pablo, formed by the river bearing that name at the boundary between Tabasco

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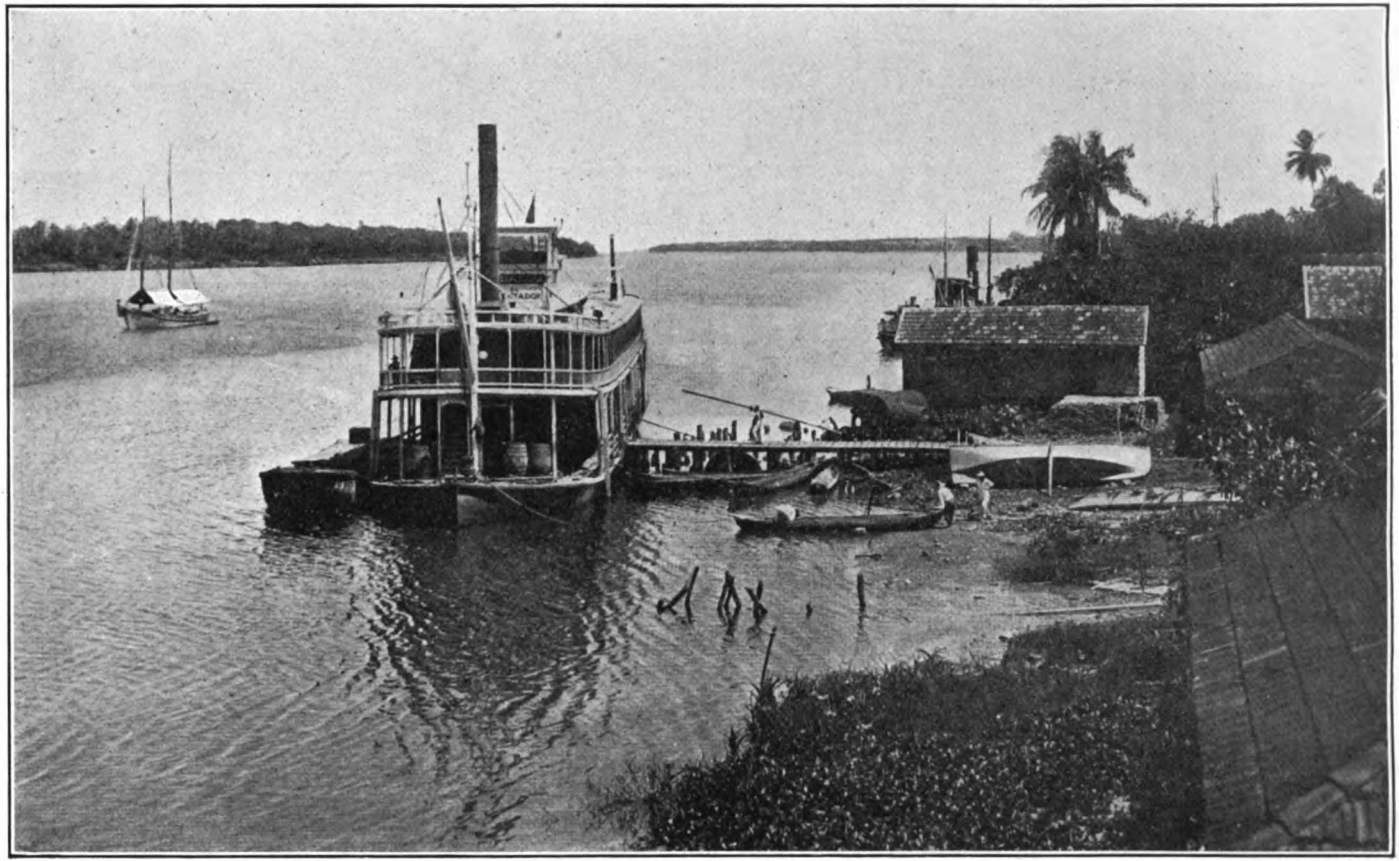

THE CONFLUENCE OF THE GRIJALVA AND USUMACINTA RIVERS IN THE STATE OF TABASCO.

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and Campeche; the Tabasco, Frontera, or Principal, formed by the Grijalva, giving access to the port of Frontera and the capital of the State; the Chiltepec, which is the widest and deepest of all, formed by the Gonzalez River, and the. Tonalá, formed by the river Tancochopa, the boundary between Tabasco and Veracruz. The surface of the State is generally a plain, slightly broken by hillocks and river beds, except toward the south and southeast, where a spur of the Sierra Madre rises.

The climate is hot, tempered, however, by the numerous streams. Rainfall is abundant. The thermometer ranges from 27° to 28° C. (80° to 82° F.) during the summer months, February to May; while during the winter months, December to January, when it is cooler, the range is from 17° to 18° C. (62° to 64° F.)

Of all the States of Mexico, Tabasco possesses the best hydrographic system. Two large basins, the Usumacinta and the Grijalva, collect the innumerable streams. The Usumacinta River is formed by the junction of the Pasión and Salina rivers (both entering from Guatemalan territory), and is afterwards joined by the waters of the Chajill, Jataté, Lacantán, Cendales, and others. This river is 800 kilometers (about 500 miles) in length, and navigable 300 kilometers (186 miles) from its mouth for good-sized steamers. The Grijalva River is formed by the confluence of the Mexcalapa and the Sierra, or Tacotalpa. The former rises in the State of Chiapas, and receives throughout its extent more than 30 streams, and is navigable for 125 kilometers (78 miles). The Tacotalpa also takes its source in Chiapas, and has numerous tributaries. The Grijalva proper commences with the junction of these two streams, and empties into the Gulf of Mexico, and is navigable from the Frontera bar as far as Las Palmas, a distance of 280 kilometers (174 miles). Other rivers are the Cuxcuchopa, navigable for 60 kilometers (37 miles), the Soledad, Coccohital, Tular, Tortuguero, and Tonalá. As has been stated, the general character of the land being a plain, with little slope seaward, the rain waters form many lakes. The principal are Matillas, Chichicastre, Zapote, Viento, Palo Alto, Largartera, Veladero, Chimal, and Puerto Cabello.

Tabasco is essentially an agricultural State. The soil is fertile, and the products are those characteristic of a hot and moist climate; cacao, sugar-cane, coffee, tobacco, rubber, pepper, vanilla and maize are cultivated, while the cabinet and dye woods are naturally abundant. Banana cultivation has assumed considerable importance in recent years; chicle gum is exported on a large scale, but even then the resources of the State are only slightly developed. Lack of labor, ignorance of modern farming methods and difficult transportation impede progress; the Federal and State Governments are taking steps to overcome these obstacles, and to open Tabasco to agricultural industry.

Mining receives no attention, because no precious minerals have been found within the State, but there are indications of coal, asphaltum and cinnabar, and petroleum deposits have been worked through wells in the Sarlat and Macuspana districts.

Frontera, the principal port of the State, is the natural gateway to the interior, and is situated on the Grijalva River, 106 kilometers (72 miles) below the State capital San Juan Bautista. The port is in regular communication with others in Mexico on the Gulf by the *Compañia Mexicana de Navigación;* steamers from abroad make Frontera a port of call on many of their trips; and with the interior river steamers maintain regular traffic on the Grijalva, Usumacinta and Palizada rivers.

The only railways are local tram lines at Frontera and San Juan Bautista.

The State is divided politically into 17 Municipalities (or Partidos) with 5 cities, 12 towns, 55 villages, 499 organized estates, and 1,033 hamlets.

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The Municipalities are: San Juan Bautista, Balancan, Cardenas, Comalcalco, Cunduacan, Frontera, Huimanguillo, Jalapa, Jalpa, Jonuta, Macuspana, Montecristo, Nacajuca, Paraiso, Tacotalpa, Teapa, Tenosique.

The capital and chief city is San Juan Bautista, founded in 1598 and noted as the first spot on which Cortes set foot on Mexican soil. The city has tram-cars, fine public buildings, a cathedral, a theater, hospitals, and modern improvements. In this neighborhood begins the rubber country, which extends beyond the Guatemalan frontier. Some of the finest plantations of Mexico are in this State, with headquarters for the business in the capital.

TAMAULIPAS.

Tamaulipas became a State of the Federation October 4, 1824, and its constitution was promulgated December 8, 1857.

Boundary, Area, Population.—The State is bounded on the north by the United States (Texas); on the east by the Gulf of Mexico; on the south by the States of Veracruz and San Luis Potosi; and on the west by the State of Nuevo Leon. Its area is 83,597 square kilometers (32,268 square miles); its population (1910) is 249,253, of whom 126,620 are males and 122,633 are females.

Tamaulipas occupies one of the most beautiful sections of the Republic. Its coast line stretches from the bar of the Rio Bravo on the north to Tampico on the south, an extent of 400 kilometers (250 miles), being formed by a succession of sand banks. This part of the State is almost uninhabited, as with the exception of two or three unimportant villages. There are several bars, the principal being the Jesús María, at the junction of the Madre Lake and the Gulf of Mexico; the Tampico bar, the Soto de Marina bar, and the bar of the Rio Bravo. The prevailing winds on the Gulf coast are from east, northeast, and southeast, but in winter "northers" are frequent and dangerous. The southern and central portions of the State are mountainous, the northern part containing extensive fertile plains, adapted for stock raising. The principal mountain ranges are the Pamoranes, the San Carlos, and the Sierra Madre, which traverses the southwestern, western, and central portions, its principal peaks being Cerro Mocho and Cerro Shigüe. The most remarkable valley, by reason of its beauty and fertility, is the Jaumave; others are the Rusias and the Santa Bárbara de Ocampo.

The climate of Tamaulipas is generally hot and damp on the coast and in the vicinity of the lakes and rivers; temperate on the slopes of Sierra Madre and in the valleys, and dry and temperate in the Lágrimas Valley. Rainfall is abundant in the sierras and moderate in the valleys, and throughout the district watered by the Rio Bravo frost is frequent. The highest temperature experienced in the State is from 32° to 33° C. (89° to 91° F.), and the lowest 15° to 24° C. (59° to 75° F.), the extremes being at noon and midnight.

Tamaulipas has four large rivers which may be made navigable; also several small lakes and many small streams. The Pánuco and the Tuxpan rivers are described in Veracruz. The principal rivers are the Rio Bravo del Norte, the boundary line between Mexico and the United States, flowing from northwest to southeast, and emptying into the Gulf of Mexico; the Conchas, also called the Presas; the Soto de la Marina, navigable for 50 kilometers (31 miles) from its mouth, and the Guayalejo, with their respective tributaries. The most important lakes are on the Gulf coast, and are the Laguna Madre, 210 kilometers (130 miles) in length, containing several small islands; the Pesquerías, or Morales, 34 kilometers (21 miles) long, also containing small islands; the Tordo, San Andrés, Chairel, Champayán, and Carpintero. Mineral springs abound.

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Extending from the Rio Grande to Tampico the State of Tamaulipas is not only one of the largest, but also one of the most favored, States of the Republic. The undeveloped opportunities are encouraging colonization on an extensive scale, and to add still more to agricultural activity Government assistance has been given to one of the most important irrigation enterprises in Mexico, in the northern part of the State, where a fertile area will be irrigated and a Spanish colony established. Between the coast and the Sierra Madre is a gently rolling stretch of land, west of Tampico, drained by the Pánuco, Tamuin and Tamesi rivers, and in this district subdivision into small farms has been carried out, the lots being sold to practical farmers who will use modern scientific methods. The most profitable products grown in this area are sugar-cane, maize, bananas, citrus fruits, fibre plants, most kinds of vegetables, and even tobacco and coffee. Cattle raising is a good industry all over the State; the cattle are, with few exceptions, native stock, and in proper season may be fattened further south in Veracruz.

The mineral wealth of Tamaulipas is abundant, although it has not been developed as thoroughly as in other States. Gold, silver, copper, lead, sulphur, iron and zinc are found. The best known districts are Victoria, west of Cruz station, 278 kilometers (173 miles) from Tampico; lead and silver, with traces of gold, zinc in a few mines, and copper in others, are the chief yields. In San Jose, toward the north of Cruz, are copper mines.

In addition to the agricultural and mineral industries, the State is well known on account of the fishing, which has for ages been one of the occupations of the Indian natives; shrimps are a specialty, but tarpon and other salt water fish can be caught. The petroleum output of Tamaulipas is also considerable, and some of the most extensive wells and refineries of the Republic are located near Tampico. In the larger cities of the State manufacturing has within recent years extended considerably.

The State has two ports of entry, Tampico and Matamoros. Tampico is one of the most important ports in the Republic, ranking after Veracruz in east coast traffic. Situated six miles (about 10 kilometers) from the mouth of the Pánuco River, it possesses several fine public buildings, tram-cars, a chamber of commerce, and is modern in all ways. Vessels lie at the wharf at Tampico, a condition that greatly facilitates commerce. The Tampico-Tuxpam Canal, which starts from here, will be one of the great improvements in modern Mexico. This canal connects the lagoons along the coast for a length of 185 kilometers (115 miles), and is to have a depth of 6 feet (almost 2 meters); it opens a very fertile territory, especially at its southern extremity. The same steamship companies serving Veracruz make Tampico a port of call, also. Matamoros, on the Rio Grande, in the extreme northern part of the State, is connected with the Texas side of the river by an international bridge; it lies 50 kilometers from the Gulf (31 miles) and therefore has no great marine traffic, but the commerce with the United States is of decided importance and is growing.

The Mexican Central (National Railways of Mexico) crosses the State with its division between San Luis Potosi and Tampico. The Mexican National (National Railways of Mexico) has a division between Monterrey and Tampico, with branches, and another division between Monterrey and Matamoros. A project is well under way to connect Matamoros and Tampico by a direct line.

The State is divided politically into 4 Districts with 37 Municipalities, containing 9 cities, 28 towns, 101 organized estates and 1,474 hamlets.

The Districts are: Centro, Norte, Sur, Cuarto.

Ciudad Victoria, the chief town of the Central District and also the

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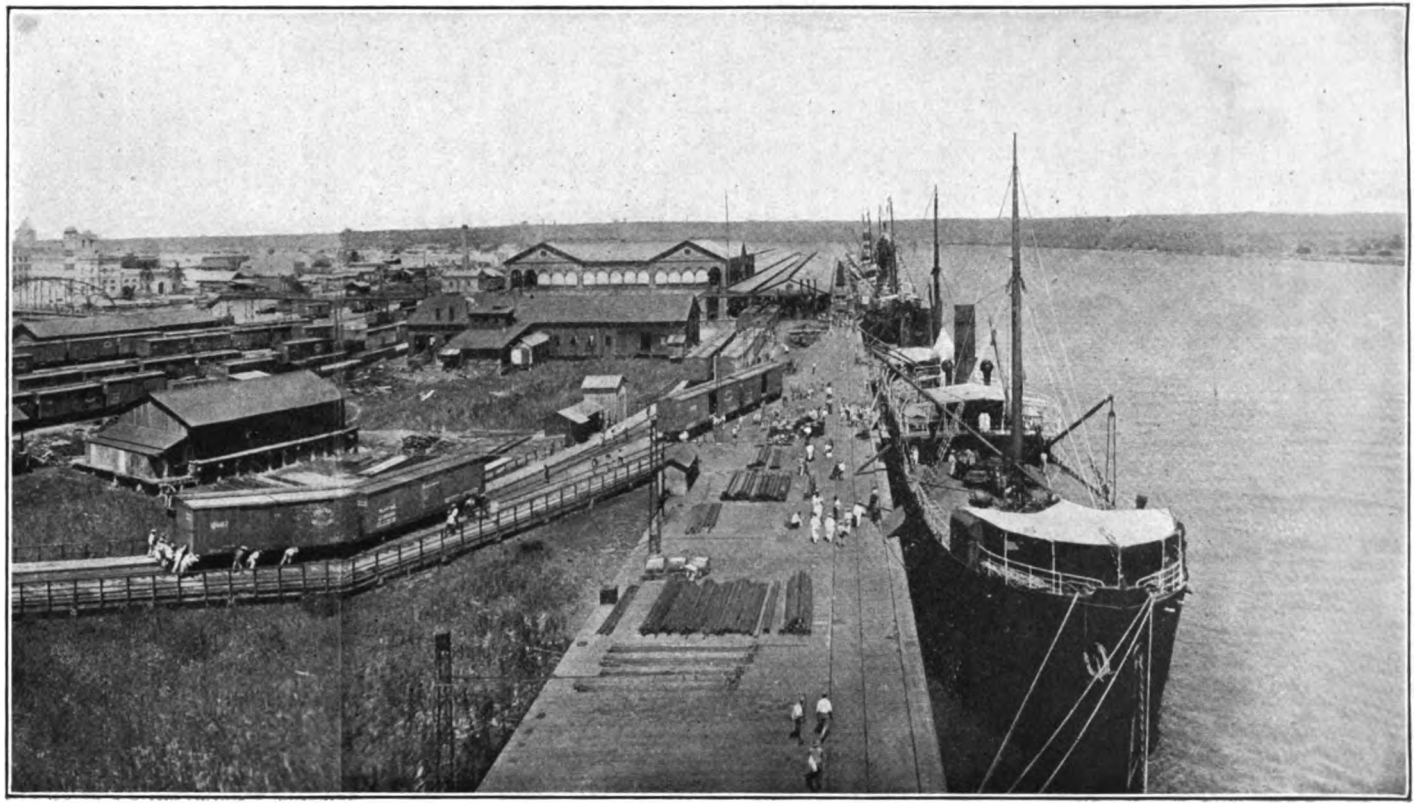

PANORAMA OF THE PORT OF TAMPICO, STATE OF TAMAULIPAS.

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capital of the State, is 1,367 kilometers (849 miles) from the City of Mexico. Victoria has good public buildings, a chamber of commerce, tram-cars and other modern conveniences. It is noted for the ixtle fiber brought here for baling before transport to Tampico.

TLAXCALA.

Tlaxcala became a State of the Federation February 5, 1857, and its constitution was promulgated May 5, 1868.

Boundary, Area, Population.—The State is bounded on the north, east, south and southwest by the State of Puebla; on the west by the State of Mexico; and on the northwest by the State of Hidalgo. It is in reality an enclave in the State of Puebla. Its Area is 4,132 square kilometers (1,595 square miles), and it is thus the smallest of the Mexican States. Its population (1910) is 183,805, of whom 91,500 are males and 92,305 are females.

There are offshoots of the Sierra Nevada in the State, and the chief eminence is the snow-capped and weird mountain of Malinche. Tlaxcala is within the cold regions of Mexico, and its valleyes, though sandy, are fertile.

The climate is cold and healthful; rainfall is moderate throughout the year and frost is frequent during the year.

The principal rivers are the Zahuapam, emptying into the Atoyac, which has other tributaries also. Three lakes, Acuitlaplico, Rosario and Xonecuila are in the State, and the streams have water power available.

Tlaxcala is essentially an agricultural State, cereals and the maguey (pulque) forming the chief products. Beans, peas, maize and chile are grown, and the wheat crops, while yielding at a very high ratio, are celebrated also as direct descendants of the wheat first grown in the country, planted by accident along with rice grains introduced by Cortes. Cattle are raised in the valleys.

The State has no importance as a mining region, though gold, silver, lead and copper have been found, and some coal reported.

The chief manufacturing interests in the State are the cotton textile mills, a glass factory and foundries.

The Mexican Railway crosses the State from northwest to southeast, and its branch from Apizaco to Puebla is partly within the borders. The town of Tlaxcala is reached by the Tlaxcala Railway from Santa Ana station. The Interoceanic Railway touches the State on the north.

Mexicano and Otomí are the Indian languages spoken.

The State is divided politically into 6 Districts with 35 Municipalities, containing 2 cities, 2 towns, 134 villages, 120 organized estates, and 219 hamlets.

The Districts are: Hidalgo, Cuauhtemoc, Ocampo, Juarez, Morelos, Zaragoza-Zacatelco.

The capital and principal city of the State is Tlaxcala, famous historically both before and after the Conquest. It has many interesting buildings. It is in rail communication with Mexico City, the distance being 169 kilometers (105 miles).

VERACRUZ.

Veracruz became a State of the Federation January 8, 1824, and its constitution was promulgated November 18, 1857, but was revised February 13, 1871, and again on October 10, 1873.

Boundary, Area, Population.—The State is bounded on the north by the State of Tamaulipas; on the east by the Gulf of Mexico; on the southeast by the States of Tabasco and Chiapas; on the south by the

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State of Oaxaca; and on the west by the States of Puebla, Hidalgo and San Luis Potosi. Its area is 75,863 square kilometers (29,283 square miles). Its population (1910) is 1,124,368, of whom 565,830 are males and 558,538 are females.

Veracruz occupies a narrow strip of land rising gradually from the coast line to the crest of the Sierra Madre Mountains. Almost the entire section is mountainous, the Sierra Madre range occupying the western central portion, running from north to south, and rising to the greatest height in the peak of Nanchampapetl, or Cofre de Perote. To the south is the majestic snow-capped volcano Citatepetl, or Orizaba. Other ranges are the Maltrata, Alcucingo, Jalacingo, Oxocupan, and Zongolica. The eastern littoral, bordering on the Gulf of Mexico, is 460 kilometers (286 miles) in extent, stretching from the Tampico Bar to Tonalá. The northern section of this coast line is called the Windward coast, while to the south, from Veracruz to the bar of Tonalá, is the Leeward coast. The shore line is broken by numerous bars, shoals, islands, and capes.

The climate is cool and agreeable in the uplands, but hot and moist in the lowlands and along the coast. The State possesses a great variety of climates, depending largely upon the altitude.

Hydrographically the State may be divided into two basins, the northern extending from the Panuco River to the Rio Blanco and the southern from the latter stream southward to Tanciochapa, the border between Veracruzand Tabasco. The rivers susceptible of navigable developmeot are the Panuco, Túxpam, Yautepec, Tecolutla, Nautla, Blanco, and Papaloápam, all having several tributaries and forming the hydrographic basins above mentioned. There are also several lakes, among them the Catemaco, Ostión, Mexcalapa, Tortuguero, and Tecuanapa.

The Panuco River, at the mouth of which is the city and port of Tampico (State of Tamaulipas), is a stream of some importance, navigable inland for considerables distances, but varying according to the season. A canal connecting the Panuco and the Tuxpam River, through the intervening system of lagoons, is intended to furnish interior communication between the ports of Tuxpam and Tampico. Steamer navigation on the Panuco is developing into considerable magnitude. The Coatzacoalcos River, at the mouth of which is the northern extremity of the Tehuantepec Railway, was early investigated by Cortes; the town of the same name is now officially called Puerto Mexico. The stream itself is broad and deep, the bar at its mouth having been successfully deepened for ocean steamers; it is navigable for over 40 kilometers (about 25 miles) for large vessels, and for greater distances on its tributaries for smaller ones.

In many of the rivers descending from the mountains water power is available. Mineral springs abound in parts of the State.

Of all the States of Mexico, Veracruz produces by far the greatest value in agricultural output. Some of the finest tobacco of the Republic is grown in Veracruz, rivaling the Cuban in flavor. It is estimated that more than half the total crop of Mexico is raised in the State of Veracruz, but the actual amount is hard to determine, as the planters are reluctant to disclose the area of land under cultivation. The State is a large grower of sugar-cane, and refine quantities of it into a good brand of sugar. From the coast up to an altitude reaching to the *tierra templada* excellent conditions for fruit culture prevail, and considerable fruit is grown, but as yet no serious attempt has been made to develop the industry systematically. The cereals are cultivated in all parts. Unfortunately the breeding and fattening of cattle has not received the careful attention the industry merits, for Veracruz offers a splendid field for this activity. In comparison with results obtained in the interior, this State

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LANDING PIER, PORT OF VERACRUZ.

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should make a favorable showing, yet it is only recently that farmers have turned attention to the advantages of the country. In the lower lying lands the forests produce the better-known cabinet woods such as mahogany, Spanish cedar, and rosewood, and there are many other hardwoods in addition. The largest quantities of timber are found on the Gulf of Mexico side of the Isthmus of Tehuantepec. An extensive area of the zapupe plant is under cultivation in the Tuxpam district. This fiber is stated to be equal to the henequen fiber of Yucatan.

Many mines are included within the State of Veracruz, the metals known being gold, silver, lead, mercury, copper, iron and mercury; no great development has taken place, however, and the future of the mining industry is still undetermined.

The industries of the State are largely those connected with agriculture, but there are many manufacturing interests, as the country is well settled and is in many respects the oldest in Mexico. The largest cotton mill in the Republic is situated in Orizaba, which city is really the most important industrial center of the Republic; jute mills also are located here. In the other cities are factories of chocolate, matches, soap, candles and cigars.

Large areas of petroliferous lands are found in both the northern and southern portions of the State; near Tuxpam are wells in production, and at Minatatlan, on the Coatzacoalcos River, are other wells, with refineries for the oil.

The ports of the State of Veracruz are Veracruz, Tuxpam, and Puerto Mexico (Coatzacoalcos) for international traffic, and Alvarado with minor harbors for coastwise service. The City of Veracruz is the premier port of the Republic, and the natural gateway of the country through which passes more than one-half of the foreign maritime trade, and approximately a quarter of the total imports and exports. Accommodation for vessels of all sizes is offered, so that they can approach to modern docks, equipped with every convenience for expeditious loading and unloading; transfer is made direct to freight cars alongside the piers, so that foreign commerce is facilitated according to the best of international standards. Veracruz is to-day thoroughly modern; it has electric tramcars, telephones, lights, good drainage and water supply, by which the earlier terror of yellow fever is entirely removed; fine public buildings both old and new, a theater, a public (the People's) library, and an artillery school.

The steamship lines serving the port are: Royal Mail Steam Packet Company, from England and Belgium; Harrison Line, and Leyland Line, from England; Cuban Steamship Company, from England and New Orleans; Hamburg-American Line, from Germany; Compagnie Generale Transatlantique, from France; Compañia Trasatlantica, from Spain; Elder Dempster & Co. (Canadian Line), from Canada; Norway-Mexico Gulf Line, from Norway; Danish Royal Mail Line, from Denmark and Germany; New York and Cuba Mail Steamship Company, from New York (Ward Line); Wolvin Line, from Texas City and Galveston; Compañia Mexicana de Navegación, for coastwise service. Steamers on these lines make regular schedules, and most of them stop at intermediate ports in Cuba, the West Indies and even in Europe; they connect with steamers for other parts in the world, either in New York or in their home ports. There has recently been established a line of through steamers for both freight and passengers between Veracruz and Buenos Aires, Argentina, but its schedule has not yet become regularly in operation.

Tuxpam lies 208 kilometers (129 miles) northwest of Veracruz, and 8 kilometers (5 miles) above the mouth of the Tuxpam River. The depth of water over the bar is insufficient for large vessels, so that the shipping from here is restricted, but with the growing petroleum industry

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"Independencia" Avenue, Port of Veracruz.

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in the neighborhood, the port will in all probability be opened to a greater trade by the Government. This Tuxpam must not be confused with a town of the same name (sometimes spelled with *n* instead of *m*, in the State of Colima).

Puerto Mexico, originally called Coatzacoalcos and at the mouth of the river of that name, has become one of the busiest shipping centers of the Republic since the opening of the Tehuantepec National Railway, of which it is the northern (Atlantic) terminus. The natural harbor is of great capacity, and the bar has been deepened for heavy draught steamers; the port works are first class. Many of the same steamship lines serve this port as call at Veracruz and Tampico. In addition the steamers of the American-Hawaiian Line make this port regularly in their traffic between the Hawaiian Islands and the west coast of the United States.

The Mexican Railway crosses the State with its main line between Veracruz City and Mexico City. The Interoceanic Railway (National Railways of Mexico) passes through the State, touching at Jalapa, the capital. The Veracruz and Isthmus Railway (National Railways of Mexico) has its main line from Veracruz to its junction with the Tehuantepec National Railway. The Tehuantepec National Railway is within the State except for a portion of its southern end, which is in the State of Oaxaca. The Veracruz (Mexico) Railway runs south in the State to Alvarado, and its steamers carry on a commerce along the interior lagoons to connect finally with a branch of the Tehuantepec National Railway at San Juan Evangelista.

The Chinanteco, Mazateco, Mixteco, Otomí, Popoloco, Tepehua, and Zapoteca are the Indian languages recognized.

The State is divided polticaly into 18 Cantons, with 180 Municipalities, containing 13 cities, 32 towns, 137 villages, 455 organized estates, and 6,011 hamlets.

The Cantons are: Veracruz, Acayucan, Coatepec, Cordoba, Cosamaloapan, Chicontepec, Huatusco, Jalacingo, Los Tuxtlas, Minatitlan, Misantla, Orizaba, Ozuluama, Papantla, Tantoyuca, Jalapa, Tuxpan, Zongolica.

Jalapa (sometimes spelled Xalapa) is the capital of the State of Veracruz, situated 310 kilometers (193 miles) from the City of Mexico. It is often called the garden spot of the Republic, and was much beloved by the early Spanish settlers, because its altitude gave immunity from the dreaded fevers of the coast. The wonderful scenery in the neighborhood, and the interesting ruins of prehistoric inhabitants, make the city attractive for travelers. There are good public buildings, both old and new. The city has now electric lights, tram-cars, telephones, and is the center of developing manufacturing activties.

Orizaba and Córdoba are celebrated cities in the State, and, apart from their historic and scenic attractions, deserve the attention of the traveler, student and business man.

YUCATAN.

Yucatan became a State of the Federation October 4, 1824, and its constitution was promulgated April 19, 1857, and revised January 21, 1870.

Boundary, Area, Population.—The State of Yucatan, since the segregation of the Territory of Quintana Roo, occupies the northwestern portion of the Peninsula to which it gives its name; it is bounded on the north by the Gulf of Mexico; on the east and south by the Territory of Quintana Roo; on the southwest by the State of Campeche, and on the west by the State of Campeche and the Gulf of Mexico. Its area is 48,097 square kilometers (18,565 square miles). Its population (1910) is 337,020, of whom 166,713 are males and 170,307 are females.

The peninsula of Yucatan is an immense plain, which, starting from

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the coast line, rises gradually toward the interior to a height of about 60 meters (200 feet). In the northwest, where Mérida is located, the soil is of a calcareous, dry, and rocky formation, and until the culture of henequen transformed it into one of the richest regions of Mexico it was proverbially sterile. The fertility of the land increases toward the northeast, while the southeast section offers great natural opportunities for wealth, abounding as it does in virgin forests filled with valuable dye and cabinet woods and in stretches of land suitable for the culture of all the vegetable species.

There are no rivers, and all drinking water is obtained from natural wells sunk to a greater or less depth. The so-called Lagartos River is in reality a shallow arm of the sea, and is remarkable for the fact that at a distance of about 400 meters (1,300 feet) inland pools of fresh water spring up amid the salt. These are called "Bocas de Conil," and are supposed by Humboldt to be due to immense hydrostatic pressure from

MUNICIPAL BUILDING, PORT OF PROGRESO, STATE OF YUCATAN.

the interior of the earth. Such springs are also found on the Windward coast. Throughout the State are many springs called locally *sartenejas, aguadas,* and *cenotes,* the first being deposits of rain water among the rocks; the second large reservoir-like pools, some of them having been constructed by the ancient inhabitants, and the third beautiful caverns where water is found in immense quantities. The only lake is the Chichankanab, southeast of Mérida, about 32 kilometers (20 miles) distance from Peto (in Quintana Roo), the peculiar characteristic of which is that the waters, though beautifully clear, are very bitter, and that the bed is composed of crystals closely resembling Epsom salts. Almost the entire coast is paralleled by narrow lagoons, forming islands between them and the sea.

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The climate is generally pleasant, the maximum temperature in summer being 32° C. (89° F.) and the minimum in winter 19° C. (66° F.), the summer heat being tempered by cool breezes.

The principal sources of agricultural wealth consist in the cultivation of henequen, but in the northwest are sugar plantations, while in the northeast and other portions of the State are forest regions, where dye and cabinet woods, chicle gum, tobacco and vanilla are gathered and cultivated.

Yucatan is not a mineral State, but there is abundance of marble, some coal, and the salt deposits are of commercial value to this section of the Republic.

The great industry of the State is that connected with the planting and utilization of henequen, which is prepared in its crude form, as ropes and bags, other more finished articles, and even in the beautiful hammocks for which Yucatan is celebrated.

Progreso is the only port having a regular foreign commerce, and it is the distributing center for the imports and exports of the State. The approach is difficult on account of the shoals, so that anchorage is satisfactory only at a distance from shore; goods are then lightered, sometimes four miles (6-8 kilometers). Progreso has close and frequent rail communication with the interior and especially with Merida, the capital, as well as with Campeche, the capital of that State.

Steamship companies serving the port of Progreso are: The New York and Cuba Mail Steamship Company (Ward Line), to Habana and New York, with stops also at Veracruz and Tampico; Compagnie Generale Transatlantique, to France; The Harrison Line, the Leyland Line, to England, through New Orleans or Galveston; Elder, Dempster & Co. (Canadian Line), to Canada; Hamburg-American Line, for Germany and intermediate ports.

The old port of Sisal, west of Progreso, is noted as the place giving its name to the henequen product called sisal hemp in commercial usage.

The railways in the State of Yucatan and those in the State of Campeche are treated together under the United Railways of Yucatan. The system is extensive and reaches the best known agricultural sections of the country, and carries the traveler into regions marked by the prehistoric remains of the Maya settlers. It is the intention of the Government to unite this system, as soon as construction can be completed, by rail with the interior of the Republic, the only existing gap being that between Campeche and a point on the Tehuantepec National Railway in the State of Veracruz.

Maya is the native language used even to-day in all parts of the State.

The State is divided politically into 16 Partidos, with 82 Municipalities, containing 7 cities, 15 towns, 155 villages, 52 organized estates, and 1,111 hamlets.

The Partidos are: Merida, Espita, Acanceh, Izamal, Hunucmá, Maxcanú, Motul, Peto, Progreso, Sotuta, Tekax, Temax, Ticul, Tixkokob, Tizimin, Valladolid.

Merida is the capital and the chief city in Yucatan. It was originally a large settlement of the Maya Indians, and was discovered and conquered by the Spaniards shortly after Cortes invaded Mexico. It has been completely rebuilt, however, and to-day is modern in all respects, with tram-cars, electric lights, telephones, fine public buildings, banks, a board of trade, a theater, an excellent museum, good schools, and extensive parks.

Throughout Yucatan are traces of the ancient Maya civilization, and some of the most enduring monuments of America are in this State. The native population is composed largely of descendants of these Mayas, and preserve not a few of their earlier characteristics.

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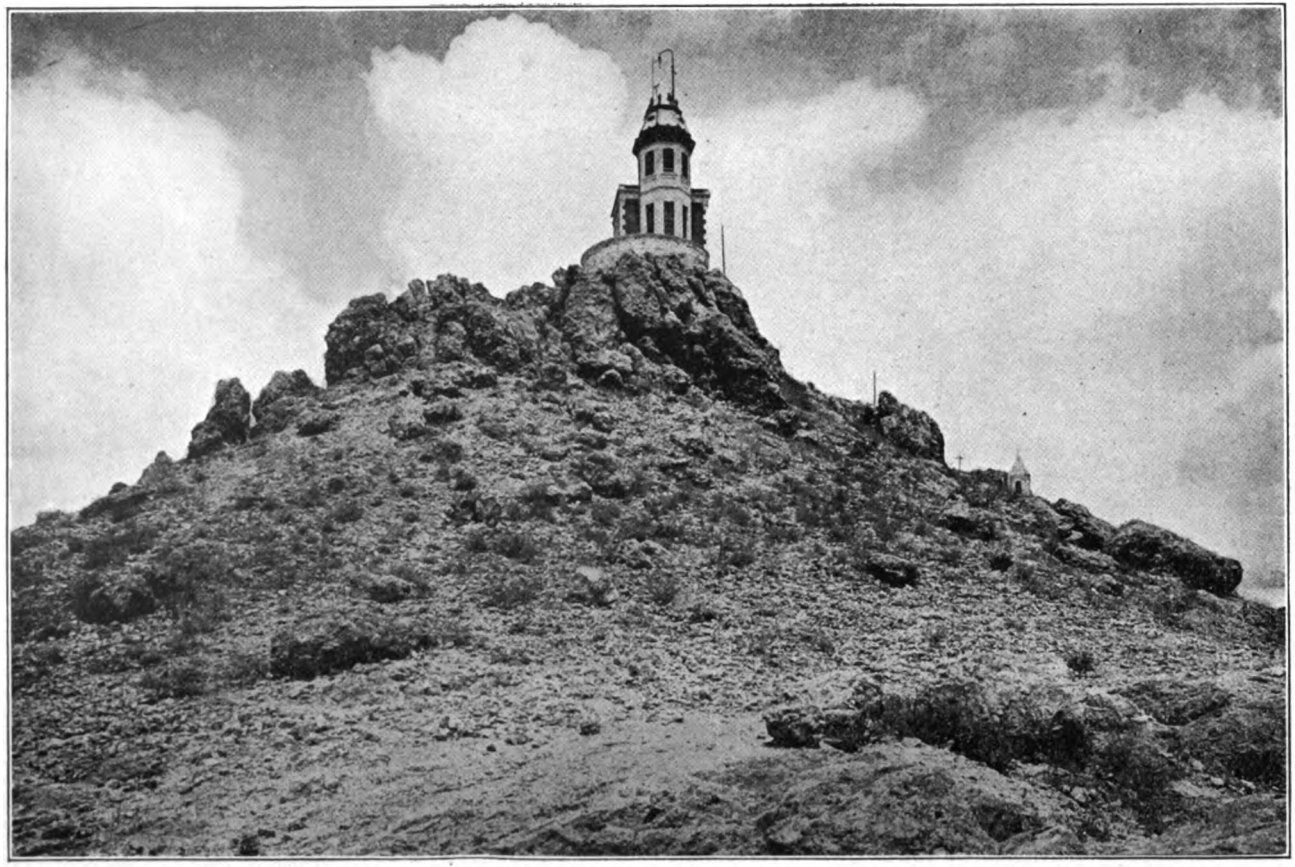

Meteorological Observatory, Near the City of Zacatecas.

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ZACATECAS.

Zacatecas became a State of the Federation October 4, 1824, and its constitution was promulgated November 5, 1857.

Boundary, Area, Population.—The State is bounded on the north by the States of Coahuila and Durango; on the east by the State of San Luis Potosi; on the south by the States of Aguascalientes and Jalisco; on the west by the State of Jalisco; and on the northwest by the State of Durango. Its area is 63,386 square kilometers (24,467 square miles). Its population (1910) is 475,863, of whom 235,715 are males and 240,148 are females.

Situated on the high, central plateau of the Republic, this State is one of the most mountainous regions of the country, and is formed by the extension of the Sierra Madre range.

The climate of a large part of the territory is cold, and only in the occasional valleys is there shelter from the winds and a warmer air that allows the cultivation of products of the soil or of the pasture. Rainfall is abundant.

None of the rivers of the State are of importance, but the principal streams are the Juchipila and the Nieves, each about 225 kilometers (140 miles) long; they have small tributaries. There are no large lakes, but pools of clear, cold water and mineral springs abound.

Zacatecas can not be classed among the important agricultural sections of Mexico, but cereals, sugar-cane in the lowest areas, and maguey are cultivated. Stock raising is profitable, the cattle being well known both on account of flesh, and of the wool from the sheep.

From a mineral standpoint this State is one of the richest regions in the world, as it contains the Sierra de Zacatecas which has produced fabulous quantities of silver. Other minerals found in greater or less quantities are gold, mercury, iron, copper, zinc, lead and bismuth, with salt. The chief camps, all of which are historical, are: Zacatecas, in and about the capital of the State, where silver and a small amount of gold are found; Veta Grande, four miles (7 kilometers) north of the capital, is chiefly silver; south of the city there is a group of veins distinctly gold bearing. Fresnillo, 40 miles (about 70 kilometers) northwest of the capital, shows also silver chiefly. Sombrerete, about 50 miles (80 kilometers) northwest of Fresnillo, produces high-grade silver ore. Chalchihuites, 25 miles (40 kilometers) southwest of Sombrerete, has silver with some gold. Aranzazu, formerly known as Mazapil, in the extreme north of the State, has gold, silver, lead and copper. Bolanos, 68 miles (110 kilometers) southwest of the capital, has silver. Juchipila, at the extreme south of the State, is rather gold producing. Pinos, 90 miles (145 kilometers) southeast of the capital, shows largely gold, with some silver.

The industries are almost altogether those connected with mining or stock raising, but in the city of Zacatecas itself considerable manufacturing is carried on, for local markets, and the *sarapes* made here have a reputation for excellence throughout the country.

The Mexican Central (National Railways of Mexico) crosses the State in its main line between the City of Mexico and the northern frontier; it is interesting to note that at Fresnillo, in 1884, the junction took place of the construction from the north and of that from the south, uniting the United States and Mexico by a railway; it was of interest, too, that this was the first line in the world to be built across the Tropic of Cancer, which lies only a short distance to the north of Fresnillo. There is a branch of this railway from the capital to Ojocaliente, to the southwest. The main line of the division between Aguascalientes and Tampico passes through the State. There are many small mining roads.

Huichol is the Indian language recognized.

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BIRD'S-EYE VIEW OF ZACATECAS, MEXICO.

It is the Capital of the State of the same name and is situated in a rich mining district, the city itself being built over a vein of silver.

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The State is divided politically into 12 Partidos with 52 Municipalities, containing 12 cities, 12 towns, 40 villages, 138 organized estates, and 1,626 hamlets.

The Partidos are: Zacatecas, Fresnillo, Jerez, Juchipila, Mazapil, Nieves, Nochixtlan, Ojo Caliente, Pinos, Sombrerete, Tlaltenango, Villanuena.

Zacatecas is the capital and chief city of the State of that name. It has been and is yet one of the best known cities of the Republic, and is situated 706 kilometers (439 miles) from the City of Mexico. The city is rich in historical incidents, of times both before and after the conquest, and in the neighborhood are prehistoric ruins comparable to those much further south. It is equipped with many modern conveniences, fine public buildings, a mint, a large library and numerous churches, with a cathedral.

TERRITORY OF LOWER CALIFORNIA.
(BAJA CALIFORNIA.)

The Territory of Lower (Baja) California became such by a Decree of the Congress of the Union.

Boundary, Area, Population.—The Territory is bounded on the north by the United States (California); on the east by the Colorado River and the Gulf of California; on the south and west by the Pacific Ocean. Its area is 151,109 square kilometers (58,328 square miles). Its population (1910) is, according to the two subdivisions, in the North 9,905, of whom 6,058 are males and 3,847 females; in the South, 42,339, of whom 21,859 are males and 20,480 are females, a total of 52,244.

The coast line measures 3,000 kilometers (1,864 miles) bordered by a number of islands. The principal bays, where the ports open to foreign commerce are found, are La Paz and Santa Rosalía on the Gulf of California, and Ensenada Bay on the Pacific. Others worthy of note are San Quintín, San Sebastián, Vizcaino, San Pablo, San Roque, Asunción, Magdalena, Ballenas, Pequeña, and Almejas on the western or Pacific side, while on the gulf or eastern coast are San Felipe, San Luis, Remedios, Angeles, Animas, San Carlos, Concepión, San Nicolás, San Basilio, Ventana, Muertos, Palmas, and San José. The large islands also have their ports and bays, as follows: Angel de la Guarda Island contains the port of Refugio and Humbug Bay; Carmen Island, ports Lobos and Balandra and the bays of Salinas and Gavilanes, and San José Island the Bay of Amortajada, and Cedros Island the Bay del Sur. Other islands on the Pacific coast belonging to the Republic are Guadalupe, which is extremely fertile and rich in cattle; Todos Santos, San Martín, San Gerónimo, Sacramento (a reef), Elide, Cedros, Natividad, San Benito, Asunción, and the large islands of Magdalena, Santa Margarita, and Crecientes. On the gulf side are Montague and Gore at the mouth of the Colorado River, Gonzaga (a reef), the San Luis Islands, the large island of Angel de la Guarda, the Mejía Islands, San Marcos, Carmen, Santa Catalina, San José, Espiritu Santo, Cerralbo, and several others.

The peninsula is traversed from end to end by a cordillera running nearer the eastern than the western coast, the descent on the gulf side being extremely abrupt, while on the Pacific side the coast is reached by a succession of low hills. This mountain chain possesses remarkable topographical and geological features, in some places granite, occasionally metalliferous, forming the central portions. Another differential characteristic between the mountains of Upper and Lower California are the rocks of volcanic origin which occupy a large extent of the territory, giving the country a marked aspect of aridity and desolation, this being especially noticeable in the northern part of the territory, which is occupied by the Cupapás chain and the Volcano de las Vírgenes. The highest granite peak is the Cerro del Gigante, near Loreto, on the gulf

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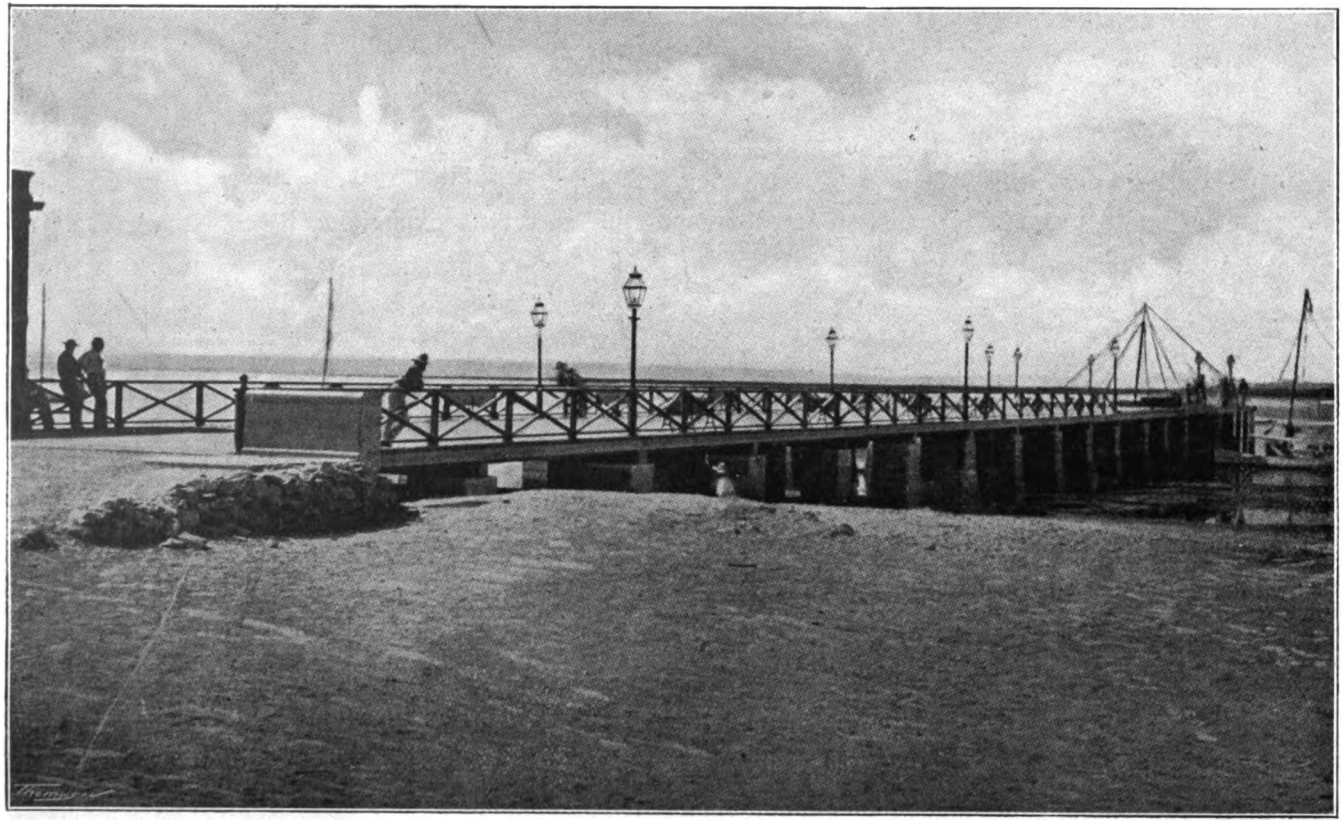

PIER AT LA PAZ, TERRITORY OF (LOWER) BAJA, CALIFORNIA.

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coast, the altitude of which is estimated at 1,300 meters (4,265 feet) above sea level.

The climate is hot and dry in the north, and more temperate toward the south, but in general it is tropical.

Water is lacking, as a rule, throughout the Territory; the Colorado River is the only stream of importance.

Lack of irrigation and scarcity of rainfall are the causes of the general sterility of the soil and the consequent limitations of agricultural development. Notwithstanding this, however, there are in some portions of the peninsula spontaneous productions of the soil which yield large profits. Principal among these is the archil, or Spanish moss, used for dyeing purposes, which grows profusely throughout an extensive belt between 23° 22′ and 26° 24′ north latitude on the west coast. It is not found on the eastern or gulf side, but its growth begins again, though to a limited extent, on the coasts. Sugar cane and tropical fruits are successfully cultivated in the humid sections, and the grape also receives some attention. Maize and tobacco grow readily, and there are many cattle ranges in parts of the country, all going largely to supply local needs.

The mineral resources of the Territory are important, the principal mining centers being as follows: San Antonio, in the south, producing silver, native sulphur and some gold. Virgenes, about 20 miles (32 kilometers) east of La Paz, has silver and some gold. Cacachilas has silver and gold. Isla de San Jose has copper, silver and gold. Isla de Carmen has copper and extensive deposits of salt. Santa Rosalia has large copper mines. Mulegé has manganese ores, with copper, lead and silver. Among the minerals declared are gold, silver, copper, lead, sulphur, iron, and manganese, with garnet and tourmaline, opals and turquoises.

Except for local activities, the most developed industry is the pearl fishery, which has an extensive plant on the Gulf of California. Here the attempt is made to grow oysters systematically and to breed mother-of-pearl oysters artificially.

The ports open to foreign commerce are Ensenada, La Paz, Santa Rosalia and Magdalena Bay. Ensenada, on All Saints' Bay, only a short distance south of the United States border, is the capital of the northern district of the Teritory, and has only a moderate commerce. La Paz, on the Gulf of California, is the capital of the southern district. Santa Rosalia is on the west shore of the Gulf of California, opposite Guaymas (State of Sonora), and is an active center of commerce. These two ports are served regularly by the *Compañia Naviera del Pacífico,* a national coastwise company plying on the west coast of the Republic. Magdalena Bay has recently been made a port of entry.

A few miles of railway have been built for the mining enterprises of the Territory, and the Southern Pacific Railway has a division entering the Territory and cutting across it to the Colorado River at the location of the international dam.

Cahuillo, Cucapá and Yuma are the Indian languages recognized.

The Territory is divided politically into 2 Districts with 8 Municipalities, containing 2 cities, 1 town, 14 villages, 15 organized estates and 630 hamlets.

The Districts are South and North.

The Municipalities are: La Paz, Comandu, Mulegé, San Antonio, San Jose del Cabo, Santiago, and Todos Santos, of the South; and Ensenada, of the North. Each District is governed by a *Jefe Político,* appointed by the Federal Government.

The capital of the southern district is La Paz, that of the northern district is Ensenada. In the northern district is the frontier town of Mexicali, opposite the (Upper) California town of Calixo.

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TERRITORY OF TEPIC.

The Territory of Tepic, at one time a Canton of the State of Jalisco, was made a Federal Territory by decree of the Congress of the Union, December 12, 1884.

Boundary, Area, Population.—The Territory is bounded on the north by the States of Durango and Sinaloa; on the east and south by the State of Jalisco; and on the west by the Pacific Ocean. Its area is 28,371 square kilometers (10,951 square miles). Its population (1910) is 171,837, of whom 88,812 are males and 83,025 are females.

The Sierra Madre range traverses the Territory from southeast to northeast. The eastern portion of Tepic is exceedingly mountainous. Precipitous cliffs and deep *barrancas* (cañons) occur with great frequency. At the bottom of some of these are rapid mountain streams, many of which empty into Santiago River. The western part of the Territory is level, and is crossed by numerous small rivers and creeks. These streams overflow during the rainy season and flood the plains through which they pass, enriching the soil and rendering it wonderfully fertile and productive. In the southern part of the Territory, in the district of Ahuacatlán, the country is almost entirely of volcanic origin. In this part of Tepic is found the celebrated volcano Ceboruc. In 1870 this volcano was in a state of great activity, and threw out immense quantities of lava and ashes. Not far from Ceboruc is the celebrated Sangangüey Peak, which rises to a height of 2,000 meters (6,561 feet) above the level of the sea.

The climate of the lowlands is hot, while that of the higher regions is temperate and agreeable, some of the high mountain table lands and slopes being cold.

The principal river that runs through the Territory is the Lerma, or Santiago, which originates in the tributaries that flow into Lake Chapala, in the State of Jalisco. This important river empties into the Pacific Ocean just to the north of the port of San Blas. Many smaller streams are found in the Territory, a number of which could easily be used for irrigating the fertile valleys through which they pass. The Acaponeta, rising in the mountains in the north of the Territory, empties, after a course of about 130 kilometers (81 miles), into the Pacific Ocean at the Boca de Teacapan. The San Pedro, rising not far from the same place as the Acaponeta, flows in a more southerly direction and empties into the lagoon of Mexcaltitlan, an inlet of the Pacific north of the mouth of the Santiago. There are a few small lakes in the interior, and the shore is indented with lagoons connected with the Pacific Ocean. The coast line of the Territory measures 500 kilometers (311 miles).

The agricultural productions of the Territory are numerous and abundant. They are similar in variety and number to the productions of the famous agricultural States of Veracruz, Puebla, and Oaxaca. The valley of Jala is famous for its great productiveness, the fertility of the soil being such that the planting of one bushel of corn is said to yield six hundredfold. Besides cereals, cotton, tobacco, sugar cane, coffee, beans, and rice grow luxuriantly. Agriculture is the chief industry of Tepic, and corn and beans are raised in considerable quantities all over the Territory. Wheat and other cereals grow in the districts of Ahuacatlán and Tepic; rice in Compostela, Tepic, Ahuacatlán, and San Blas; cotton in Acaponeta and Santiago Ixcuintle; and coffee, tobacco, and sugar cane in all the districts of the Territory.

The best coffee lands are in the district of Compostela, in the south of the Territory, and this finds its way to the markets of Germany and the United States. Rubber trees are found in their wild state, and are being tapped with profit. The soil is adapted for henequen, and is very

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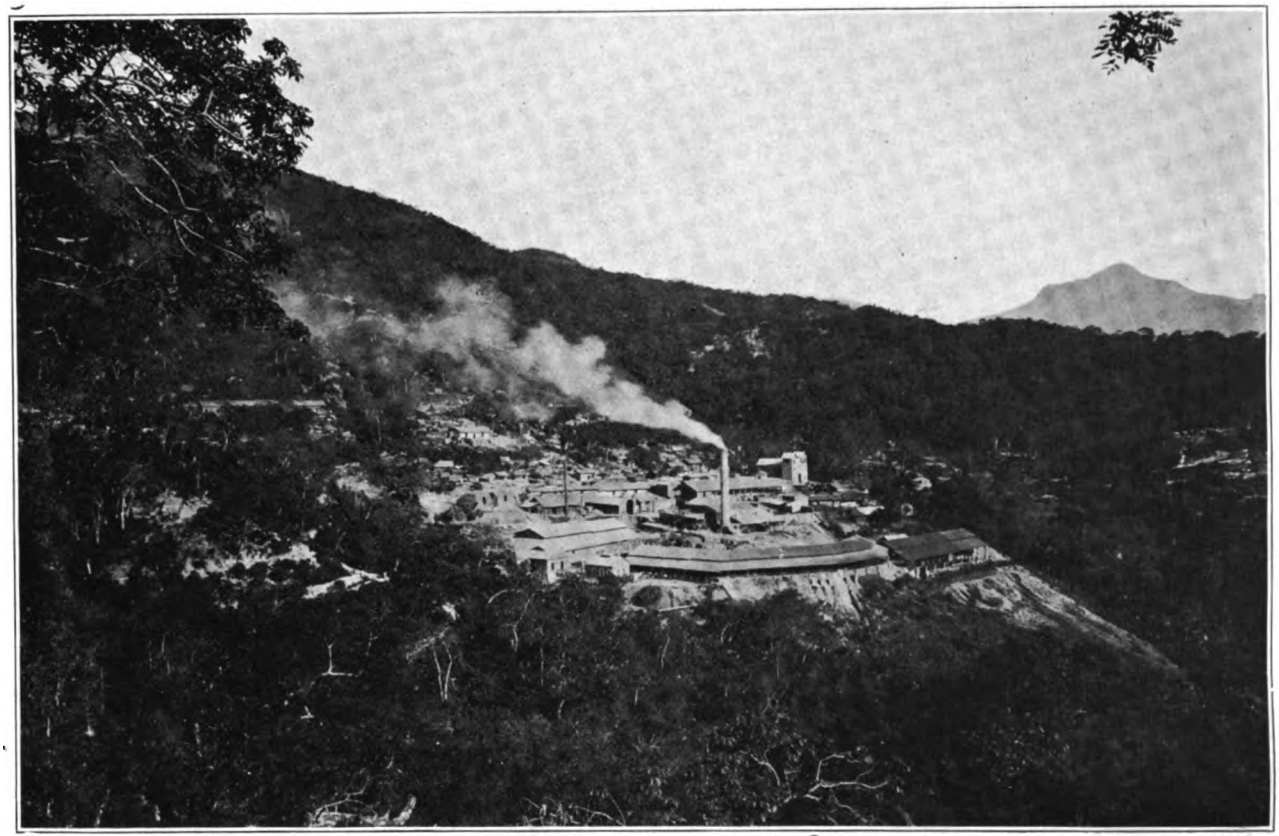

"El Zopilote" Foundry, State of Tepic.

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suitable for the cultivation of the olive. Stock raising is carried on throughout the Territory, and there are some really large herds of cattle, sheep and goats.

The Territory has considerable mineral resources, with several well-known mining camps. The principal of these are Santa Maria del Oro, with rich gold-silver veins. In the Acaponeta district, about 160 kilometers (112 miles) north of Tepic, copper, silver and lead are found, with some low-grade gold-silver ores. At Santiago Ixcuintla, about 60 kilometers (38) miles) northwest of Tepic, and at Ixtlan, the same distance to the southeast, are old mines worked with modern methods. At Ahuacatlan, very near Ixtlan, there is gold. About 65 kilometers north of the city of Tepic is the Yaqui copper prospect, with copper, zinc, gold and silver.

Manufacturing to a noticeable degree is carried on in the Territory, especially in the city of Tepic, where there are cotton mills, soap and other factories, with modern machinery and appliances.

San Blas, just west of the capital, is the chief seaport of the Territory; it has a good-sized trade, both local and foreign, but the harbor facilities are not satisfactory, so that further great development can be expected only when these are improved, and when the railways are extended into closer touch with the interior. The port is served by the following steamship lines: Compañia Naviera del Pacífico, for coastwise (Mexican) commerce. Pacific Mail Steamship Company, for ports between San Francisco and Panama. Canadian-Mexican Pacific Steamship Company, for ports in Mexico and Vancouver and Victoria, British Columbia. Kosmos Line, for Pacific ports in both North and South America, and Germany.

The Southern Pacific Railroad Company of Mexico enters the Territory by its main line from Mazatlan and is in operation (January, 1911) as far as Yago; its plans are to continue through Ixtlan to reach Guadalajara. The line between San Blas and Tepic is proposed.

Cora, Huichol, Otomí and Tepehua are the native languages recognized.

The Territory is divided politically into 7 Partidos, with 16 Municipalities, containing 2 cities, 6 towns, 45 villages, 47 organized estates, and 1,091 hamlets.

The Partidos are: Tepic, Acaponeta, Ahuacatlan, Compostela, Ixtlan, San Blas, Santiago Ixcuintla.

Tepic is the capital and principal city of the Territory of that name. It is beautifully situated on a broad plain at the foot of the volcano of Sanganguey and on the margin of the Tepic River, which empties into the Santiago. It has fine buildings, both public and private, a handsome theater, a cathedral, banks, and a number of very attractive plazas. It is about 800 kilometers (500 miles) from Mexico City.

TERRITORY OF QUINTANA ROO.

The Territory of Quintana Roo was created by act of December 14, 1900, and erected into a Federal Territory February 25, 1904.

Boundary, Area, Population.—The Territory is bounded on the north by the Gulf of Mexico and the State of Yucatan; on the east by the Caribbean Sea; on the south by the British Honduras and the Republic of Guatemala; and on the west by the States of Campeche and Yucatan. It was formed from the eastern part of the State of Yucatan, as being more suitable for government under Federal than State control. Its area is 43,104 square kilometers (16,638 square miles). Its population (1910) is 9,086, of whom 6,070 are males and 3,016 are females. The country is largely inhabited by the Maya Indians, direct descendants of the peoples discovered there during the conquest.

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The climate is essentially tropical, as the configuration of the land is such that no great variation of altitude modifies its relation of latitude. Rain is abundant, and humidity prevails.

The Territory has but one navigable river, the Rio Hondo, emptying into the Bahia de Chetumal, and forms the boundary between British Honduras and Mexico. Minor streams empty into the ocean after a slight course from the interior. A few lakes are located within the Territory, but from the coast are lagoons as insets from the Caribbean Sea. A great scarcity of surface water (springs) has always marked the region, as that of Yucatan also.

Agriculture is of the most primitive kind, as there is no soil adapted to agriculture as understood in the United States. The entire region has been called a "petrified sea," or perhaps the roof of an immense cave. There are, however, possibilities for tropical agriculture, such as the cultivation of cocoanuts, the gathering of rubber and chicle, dye and hard-woods. Sponge fishing is carried on by Cubans, off the coast.

Evidence of the existence of coal, petroleum and asphalt are present. Copper has been mined, and the entire region seems to be cupriferous, while early explorations demonstrated the use of copper instruments and the discovery of copper ore among the natives.

A few natural harbors exist along the coast, which extends for about 800 kilometers (500 miles), but this is studded with reefs and navigation is dangerous on that account. Bahia de Ascensión and Bahia del Espirito Santo are protected, and have an average depth of three fathoms. The Mexican Government has begun the construction of an artificial harbor at Xcalak, which is to be the outlet of the interior. Payo Obispo, on the Bahia de Chetumal, at the mouth of the Rio Hondo, has a custom-house through which most of the traffic is considered.

A (military) railway, 58 kilometers (36 miles), is operated from Vijia Chica, on the Bahia de la Ascensión to Santa Cruz de Bravo. Under construction is an extension of this railway for about 160 kilometers (100 miles) further to Peto, where connection will be made with the United Railways of Yucatan.

The Territory is divided politically into 3 Districts, with 7 Municipalities, containing 1 city, 13 villages, 3 colonies and 4 hamlets.

The Districts are: Centro, Norte, Sur.

Santa Cruz de Bravo is the capital and principal city of the Territory. It is a military post, with a population of about 2,000, and some modern conveniences, and telegraphic communication with all parts of the Republic. In this region are numerous remains of the old Maya civilization.

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APPENDIX I.*

LIST OF TRIBES AND THEIR PRESENT HOMES.

ATHAPASCAN.

Coyoteros—Now in Arizona.
Changuaguanes—Chihuahua.
Chilpaines—Coahuila.
Mimbreños—Sonora.

CHIAPANECAN.

Chapanecos—Chiapas.

CHINANTECAN.

Tenez—Oaxaca.
Teutecas—Oaxaca.
Tzinantecos—Oaxaca.

COAHUILTECAN.

Alasapa—Coahuila, Nuevo Leon.
Catuxanos—Coahuila, Tamaulipas.
Coahuiltecos—Coahuila.
Comecrudos—Tamaulipas.
Conehos—Chihuahua.
Cotoname—Coahuila.
Chayopinos—Coahuila.
Panzanes—Coahuila.
Pihiques—Coahuila.
Texanos—Tamaulipas.

HUAVAN.

Huaztontecos—Tehuantepec.

MAYAN.

Alames—Chiapas.
Cocomes—Yucatan.
Comitecos—Chiapas.
Chañabales—Chiapas.
Cheles—Yucatan.
Choles—Chiapas.
Huastecas—Veracruz.
Itza—Yucatan.
Jocolabal—Chiapas, Chañabal.
Kupules—Yucatan.
Maya—Yucatan, Tabasco, Chiapas.
Tarelepa—Southern Mexico.
Tzentals—Tabasco, Chiapas.
Tzontals—Chiapas.

*The linguistic families as a list of tribes of Mexico are here given under the tribal name, with the locality with which each is particularly identified.

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NAUHUATL.

Acaxees—Sinaloa, Durango.
Agualuce—Tabasco (also Ahualulco).
Ateacaris—Jalisco.
Aztecas—Anáhuac.
Cohuixcas—Guerrero.
Colotlans—Jalisco.
Corarus—Jalisco.
Coras—Jalisco.
Cuitlatecos—Guerrero, Michoacan.
Chalcas—Lake Chalco.
Chinarras—Chihuahua.
Guazapari—Chihuahua.
Huicholes—Zacatecas, Jalisco.
Huites—Sinaloa.
Humas—Chihuahua.
Humes—Durango.
Mazapil—Zacatecas.
Sochimilcos—Lake Xochimilco, Valley of Mexico.
Tlascalans—Tlascala.
Yaquis—Sonora.

OTOMIAN.

Charaeos—Michoacan.
Charenses—Michoacan.
Jonaz—Guanajuato, Querétaro.
Mazahua—S. W. Valley of Mexico.
Mecos—Zacatecas.
Otomi—Middle States.
Pames—Mexico, Querétaro, Guanajuato, Nuevo Leon, San Luis Potosi.
Pirindas—Mexico, Michoacan.
Serranos—Tamaulipas.

PIMAN.

Ahomaos—Sinaloa.
Basiroa—Sonora, Sinaloa.
Batucari—Sinaloa.
Cahita—Sonora, Sinaloa.
Comuripas—Sinaloa.
Chinipa—Chihuahua.
Eudeves—Sonora.
Guaymas—Sonora.
Himeris—Sonora.
Hizos—Chihuahua.
Matapanes—Sinaloa.
Nevomes—Sonora.
Opata—Sonora.
Papagos—Sonora.
Pimas—Sonora.
Saharipas—Sonora.
Sobaipuris—Sonora.
Tarahumaras—Chihuahua.
Teatas—Sonora.
Tecoripas—Sonora.
Tepeguana—Durango.

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TAÑOAN.

Piros—Chihuahua.
Tehua—Near El Paso, Texas.

TARASCAN.

Michoas—Michoacan.
Tarascos—Michoacan, Guerrero, Guanajuato, Jalisco.

TEQUISTLATECAN.

Chontals—Oaxaca.

TOTONACAN.

Ipapanes—Veracruz.
Naolingos—Veracruz, Puebla.
Tatimoles—Veracruz.
Tektikilhatis—Veracruz.
Totonacos—Veracruz.

YUMAN.

Aripas—Lower California.
Cochimis—North and Middle California Peninsula.
Cocopas—Lower Colorado River.
Comoyei—Lower Colorado River.
Conchos—California.
Coras—Lower California.
Cuchan—California.
Guaicuru—Lower California.
Kutchan—Lower Colorado River.
Laimonos—California Peninsula.
Pericúes—Lower California.
Seris—Sonora.
Supis—Chihuahua.
Uchitas—California.

ZAPOTECAN.

Amuchgos—Guerrero.
Cuicatecos—Oaxaca.
Chatinos—Oaxaca and Chiapas.
Chochona—Oaxaca.
Chuchones—Oaxaca and Guerrero.
Mazatecos—Oaxaca.
Mixrecos—Oaxaca, Puebla, Guerrero.
Netzichos—Oaxaca.
Ocotlanos--Oaxaca.
Soltecos—Oaxaca.
Tepozcolula—Oaxaca.
Tlapanec—Guerrero.
Triquis—Oaxaca.
Xicayan—Guerrero, Puebla.
Zapatecos—Oaxaca.

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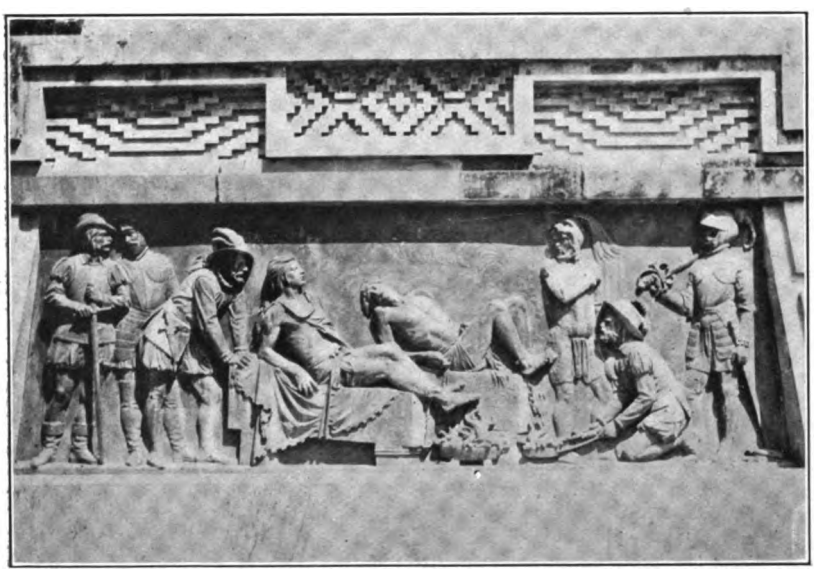
ZOQUEAN.

Coviscos—Puebla.
Chimalapas—Tehuantepec.
Chinquimes—Puebla, Guerrero.
Jopes—Chiapas.
Mijes—Oaxaca.
Pinomes—Tabasco, Chiapas, Oaxaca.
Popolucas—Puebla.
Tapijulapanes—Tehuantepec.
Tecojines—Jalisco.
Tenimes—Puebla.
Yopes—Puebla.



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APPENDIX II.

ANCIENT REMAINS IN MEXICO.

AGUASCALIENTES: Labyrinths and tunnels beneath the city, like catacombs.

BAJA CALIFORNIA: Rock paintings and inscriptions.

CAMPECHE: Paved roads, or calzadas; terra-cotta idols, etc. Beneath the city is a system of caverns, excavated by the Mayas and used by them as catacombs.

CHIAPAS:

Palenque, ancient city of vast extent.
Lorillard City, ruins resembling Palenque.
Ococingo, groups of ruins, sculptures, hieroglyphs.

CHIHUAHUA: *Rio de las Casas,* adobe pueblos, Casas Grandes.

COAHUILA:

San Lorenzo, rock paintings, mummies, relics.
San Martin, ruins and pottery.

COLIMA: No remains reported.

DURANGO:

Bolsón, rock paintings and carvings, mummies.
La Breña, caves yielding relics; between Suchil Valley and Chalchihuites, Chichimec remains.

GUANAJUATO: Only cave dwellings and relics.

GUERRERO: Foundations, remains of settlements.
Uina, ruins and burial places.
Tlapa, tombs called Teteles.
Dos Caminos, cave with pottery.

HIDALGO: *Tula,* pyramid, sculptures, idols, relics.

JALISCO: Artificialized hills.

L. Chapala, vestiges of ancient settlements and pottery.

MEXICO:

Actopan, pottery relics.
Ahuehuepa, statue bearing hieroglyphics.

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MEXICO (*continued*):

L. Chalco, causeways across the lake; traces of ancient city on Xico Island; sculptures on Misquique Island; sculptures at Xochimilco; carved cylindrical stones at Tlahuac; ancient town of Culhuacan; idols, heads, fallen pyramids at Tlalmanalco.
Chapultepec, carvings on cliffs.
Malinalco, ancient wood carvings.
Mexico City, or *Tenochtitlan*. In the city all temples, etc., have been razed; calendar stone, sacrificial stone, statue of Coatlicue, sculptures at Tlatelulco; ruins of fortified hill at Tenango. In 1901, excavations for sewers brought to light an ancient temple near the cathedral.
Mecamecan, rock pyramid, carved.
Navajas, obsidian mines.
Ozumba, carved blocks of stone.
Remedios, terraced, stone-faced hill.
Tacuba, ruins, pyramids of sun-dried bricks.
Tezcuco, causeway at Chapingo; idols, pottery, relics at Contador; terraced hill and aqueduct at Tetzcutzinco (Reyes, 1888); stone wall in mortar at Huejutla; ruins of ancient city at San Juan Teotihuacan, immense terraced pyramids faced with stone, known also as the Pyramids of the Sun and Moon, and paved way.
Otumba, ruins at Tulacingo and San Miguel.
Xonacatepec, stone masks, carved circular stone.
Yahualua, tombs with stone images, northward.
Tyupilco, buildings of thin blocks of stone.
Zacualpan, stone masks and relics.

MICHOACÁN: Opals and other gems, and remains at Jiquilpán; small mounds at Irimbo; rock carvings on Aniche Island; ancient capital of Tarascos at Zintzuntzan, L. Patzcuaro.

MORELOS:

Xochicalco, terraced hill, paved roads, galleries, hill covered with masonry, summit platform, fine sculptures, Peñafiel, 1890, ch. viii.
Cuernavaca, figures carved on bowlders; temple pyramid.
Tepoztlan.

NUEVA LEON: No antiquities reported.

OAJACA:

Tehuantepec, pyramids with stairs, fortresses, ruins, underground tombs, pottery, Estrada, 1892; ruins of Quiengola, 1896.
Magdalena, statue of Zapotec prophet, Wixepecocha.
Petapa, caves with painted walls.
Loallaga, mound and hieroglyphics.
Chihuittan, ancient bridge.
Guatulco, ruins of ancient city.
Tlacolula, mound of earth.
Quiyechapa, ruined fortress.
Etla, underground tombs, images.
Peñoles, skull preserved by lime; pyramid at Tepantepec, tombs at Teotitlan.
Ouilapan, mounds everywhere.
Monte Albán, fortified holy place, subterranean chambers, pyramid, hieroglyphics, etc.

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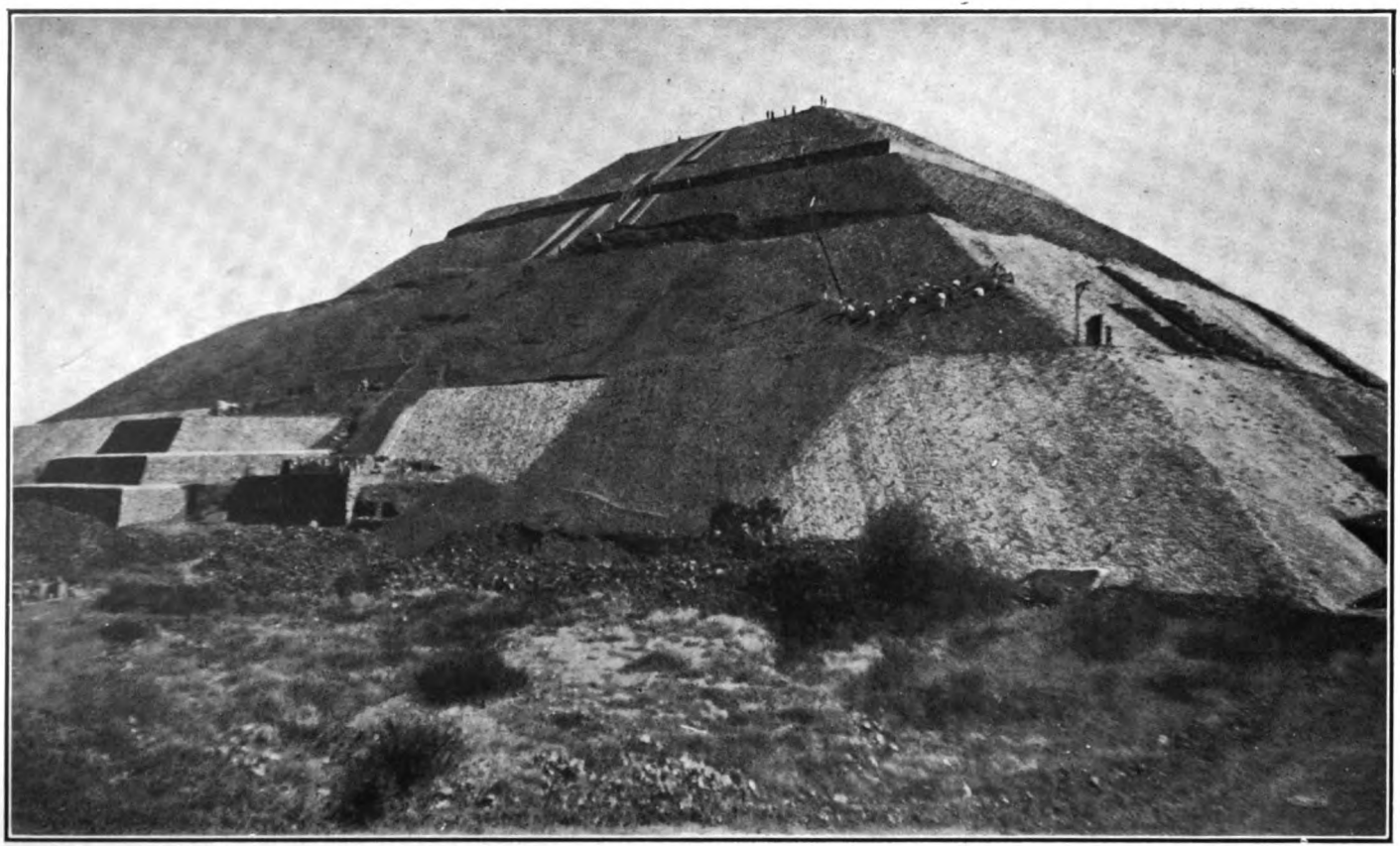

PYRAMID OF THE SUN AT TEOTIHUACAN, STATE OF MEXICO.

This imposing pyramid, dedicated to the sun by the ancient inhabitants, is 27 miles northeast of Mexico City. It is 216 feet high, with a base measuring 761 by 721 feet. The platform on the top is 59 feet from north to south, and 105 feet from east to west. Adjoining this Pyramid of the Sun is a smaller one dedicated to the moon.

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OAJACA (*continued*):

Zachila, mounds, burnt bricks, walls, statues; Tombs of Xoxo (Saville, 1899).
Mitla, finest ruin in the State and one of the grandest in Mexico.
Quietepee, hill covered with ruins, platforms, terrace walls, pyramid; at Tuxtepec, mound 63 feet high.
Hualmapam, sculptures in low relief, pottery, gold objects.
Yanghiltan, sculptured human figures.

PUEBLA:

Tehuacan, ruins of stone structures.
Chila, pyramid of hewn stone, cement covering, stairway.
Tepiaca, sculptured head and slabs.
Tepixe, storied pyramid, hewn stone, lime mortar.
San Cristóbal, storied pyramid, stairway, graded way.
Cholula, storied pyramid, 1,440 feet square, 200 feet high.
Chalchicomula, storied pyramid with stairs.
Quatulhquelchula, relief; ruins at San Pablo.

QUERÉTARO:

Querétaro City, fortified hills, pyramids, works.
Pueblita, stone walls, sculptures, mounds.
Ranas, forts, pyramids with stairs, burial mounds.
Toluquilla, ancient city and fort. Reyes, 1881.
San Juan, mound containing idols.

SAN LUIS POTOSI: No remains reported.

SINALOA: Vestiges of ruins at Mazatlan.

SONORA: Ruins at Babiacori; grottos containing mummies at Sohuaripa.

TAMAULIPAS:

Encarnación, stone idol.
Cramelote Creek, mounds, dressed stone, images, pottery.
Salt Lake, pyramidal mounds, stone faced, with steps.
Zopila, mounds faced with stone, carved stones, pottery.
Tampico, idols of basalt, carvings, pottery.

TLAXCALA:

Malinche, walls, pyramids, stone images.
San Pablo, kneeling figure in stone.
Natividad, terraced hill, ruins, standing stones, relics.
Cacaxtlan, fort, ditches, underground ways.
Tlaxcala, sculptures, pottery, stone bridges, brick parapets, obelisk at Pueblo de los Reyes, wall on frontier of State.
Tizatlan, ruins, called Xicotencatl.

VERACRUZ:

Veracruz City, ports, pyramids, foundations, graves, west of the city, in abundance.
Sacrificios I, temple, sepulcher, relics.

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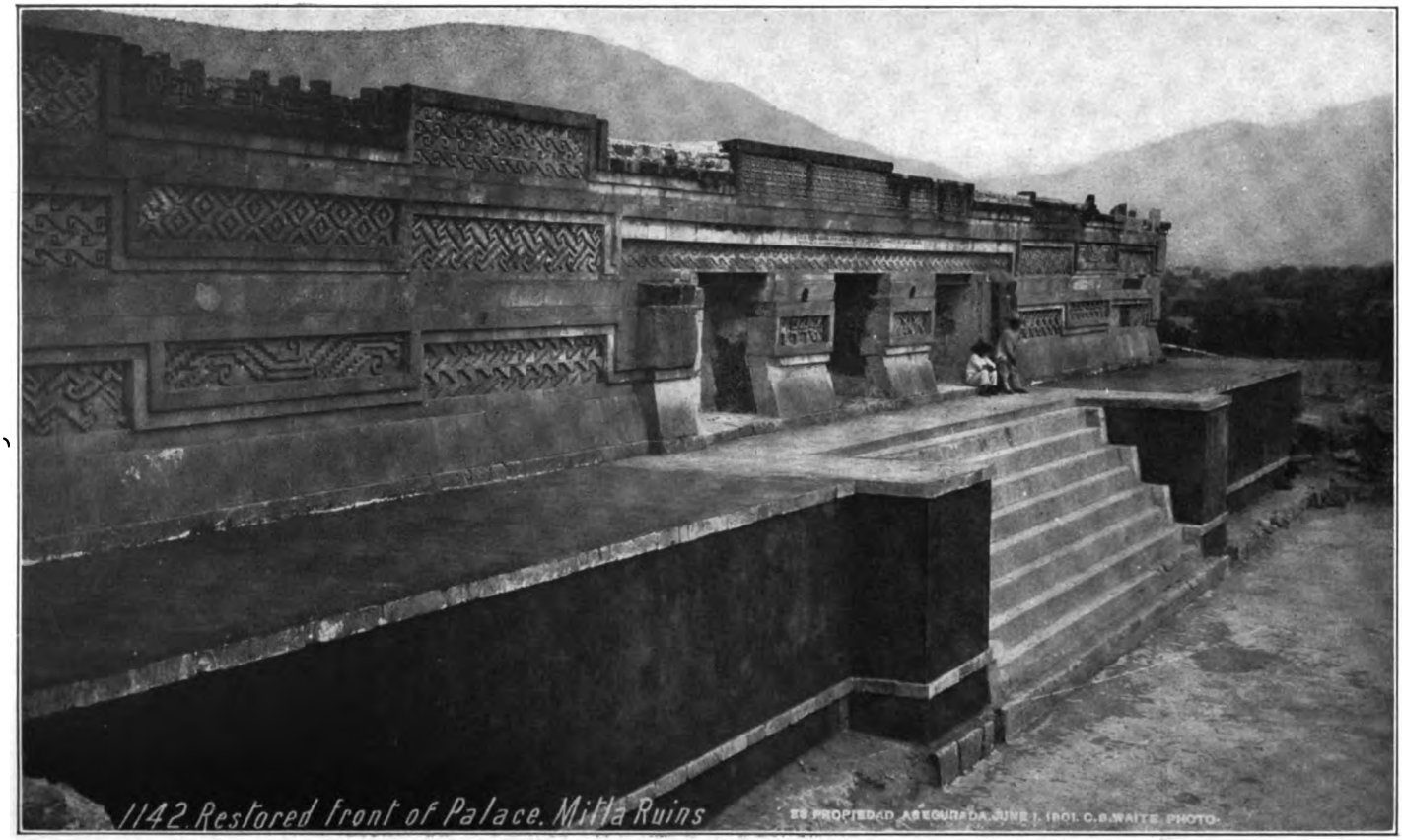

RESTORED FRONT OF PALACE, MITLA RUINS, STATE OF OAXACA.

Mitla, "the place of sadness," in the valley of Tlacolula, is 20 miles southeast of the city of Oaxaca, and the site of the most elaborately ornamented ancient ruins in America.

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RUINS OF UXMAL, STATE OF YUCATAN.
VIEW OF THE EAST FAÇADE OF THE GOVERNOR'S PALACE.

This border zone, about 10 feet wide, is most handsomely and elaborately carved and adorned with twined fillet molding and ornate snouted masks. The broad space below is filled with bold fretwork, interrupted by the wonderful over-door trophy, the central feature of which is life-size human figure, sculptured in the round and seated in a niche with festooned base. The head was surmounted by an elaborate and colossal headdress, most of which remains.

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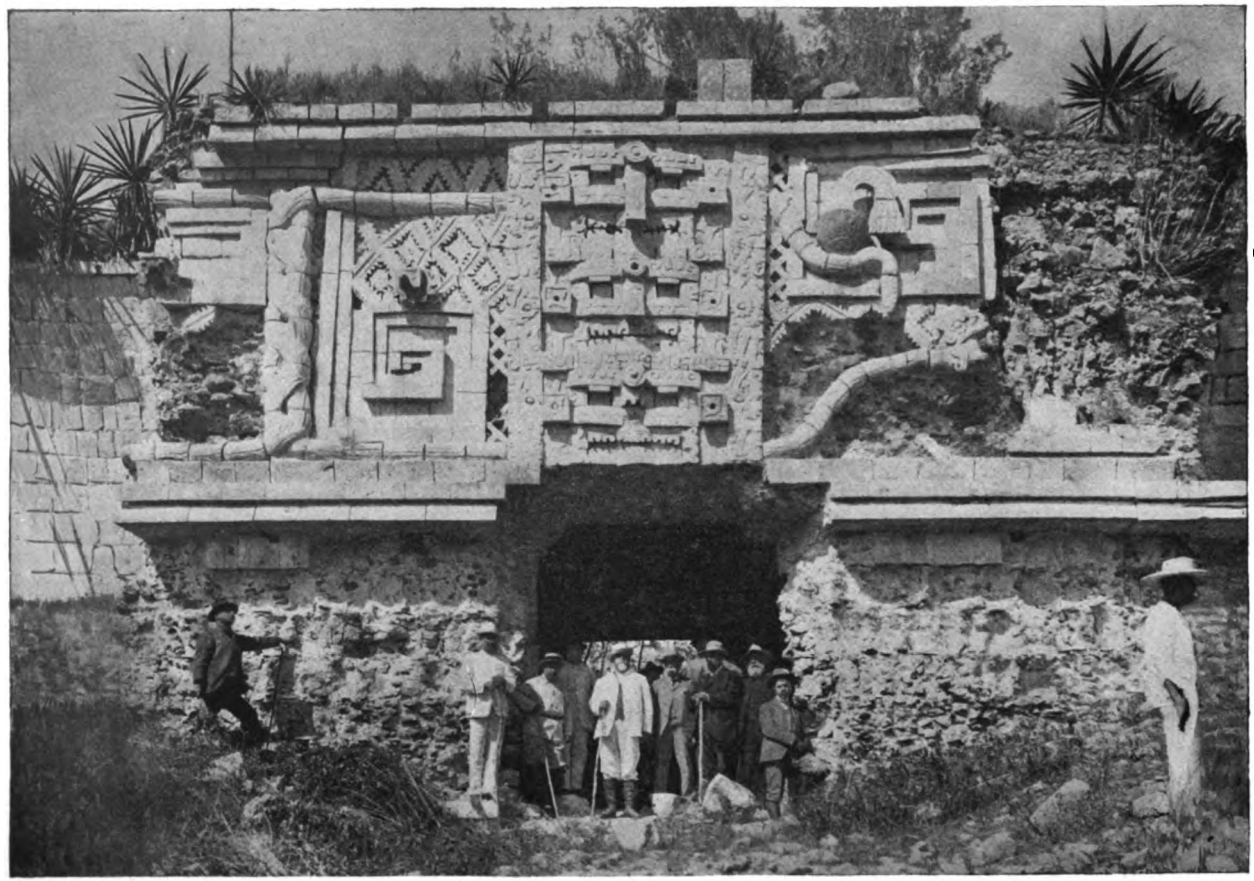

RUINS OF UXMAL, STATE OF YUCATAN.
PORTION OF FAÇADE OF BUILDING, WEST SIDE, QUADRANGLE OF THE NUNNERY (MONJAS).

The Nunnery (Monjas) consists of four rectangular structures, low and heavy in appearance, in quadrangular arrangement, with their ornate fronts facing inward upon the inclosed court. All these edifices have the walls plain and the entablature elaborately sculptured. Eight or ten distinct decorative elements are introduced in the embellishment of these buildings. The colossal feathered serpent and the snouted masks predominate on this side.

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VERACRUZ (*continued*):

Caxapa, ruined city, colossal head.
Orizaba, sculptured yokes, carvings, grotto.
Jalapa, serpent carved in rock. Pyramid on Mecaltepec. Xico, rock carvings, mounds around base of volcanic cone.
Puente Nacional, storied pyramid, with stairs.
Córdoba, line of forts.
Ceutla, terraced pyramid faced with hewn stone, forts.
Huatusco, pyramid with broad stairway, forts.
Mirador, baths and rock inscriptions.
Zacuapán, pyramid, plaza, terracetl walls.
Tlacotepec, forts and aqueduct.
Consoquitla, fort, plastered pyramids, idols, relics.
Calcahualco, forts, pyramids, columns.
Misantla, pyramids of hewn stone pavements, ruins.
Jalancingo, walls of hewn stone, subterranean shrines.
Papantla, terraced storied pyramid; other pyramids at Mapilca ranch.
Tusapan, pyramid with stairs, building on top.
Metlaltoyuca, pyramids of hewn stone, pavements.
Panuco, statues and relics.
San Nicolas, oven-like chamber, ruins.

YUCATÁN:

Uxmal, immense Maya ruins; also pyramids, sculptures, and statues near Uxmal, at Senuisacal, Muna, Sacbé, Nohcacab, Xcoch, Nohpat.
Kabah, group of 16 structures, storied buildings, sculptures, arches; Southeast from Kabah, ruins at Sanacte, Xampon, Chack, Sabacehé.
Zayi and Labná.
Kewick, Xkichmook, and Xul, ruined cities and paintings.
Tekax, ruins at Sacacal, Ticum, Santa Maria, and Chacchob.
Loltun, caves, underground water supply.
Akil and Mani, remains of cities.
Chichen Itza, ruined city and forts, sculptures; near-by ruins at Tinum, Espita, Xocen, Sitax, Coba.
Ticul, pyramidal mounds, ruins.
Mayapan, mounds, sculptures, remains of ancient Maya capital.
Mérida, on ruins of ancient city of Tahoo.
Ake, ruins of rude architecture.
Izamal, pyramids, sculptures.
Bolonchén, wells (cenotes), sculptures.
Labphak, grand Maya ruin.
Iturbide, mound of ruins, ancient town, remains near Noyaxche, Macoba, Mankeesh, Jalal, Yakatzib, Becanchen.
Tuloom, walled town. (Holmes, 1895.)
Cozumel, buildings and cisterns. Ruins also at Point Nisuc, mouth of Petampich River, Kancune Island, Mujeres Island.
Cayo Ratones, Cape Catoche, Yalahao, Emal, Monte Cuyo, Rio Lagartos, Port Silan.
Maxcanú, mounds with galleries, ruins, señotes (underground water supplies). Owing to the geological formation there are no water courses on the surface.

ZACATECAS:

Quemada. Immense ruins on mesa, roads, mounds, dressed stone, terraces, but no inscriptions or architectural decorations. At Quemada, coming southward, begin those monuments in stone that mark the virile culture of southern Mexico as against the feminal arts in clay farther north. Seler, 1908.

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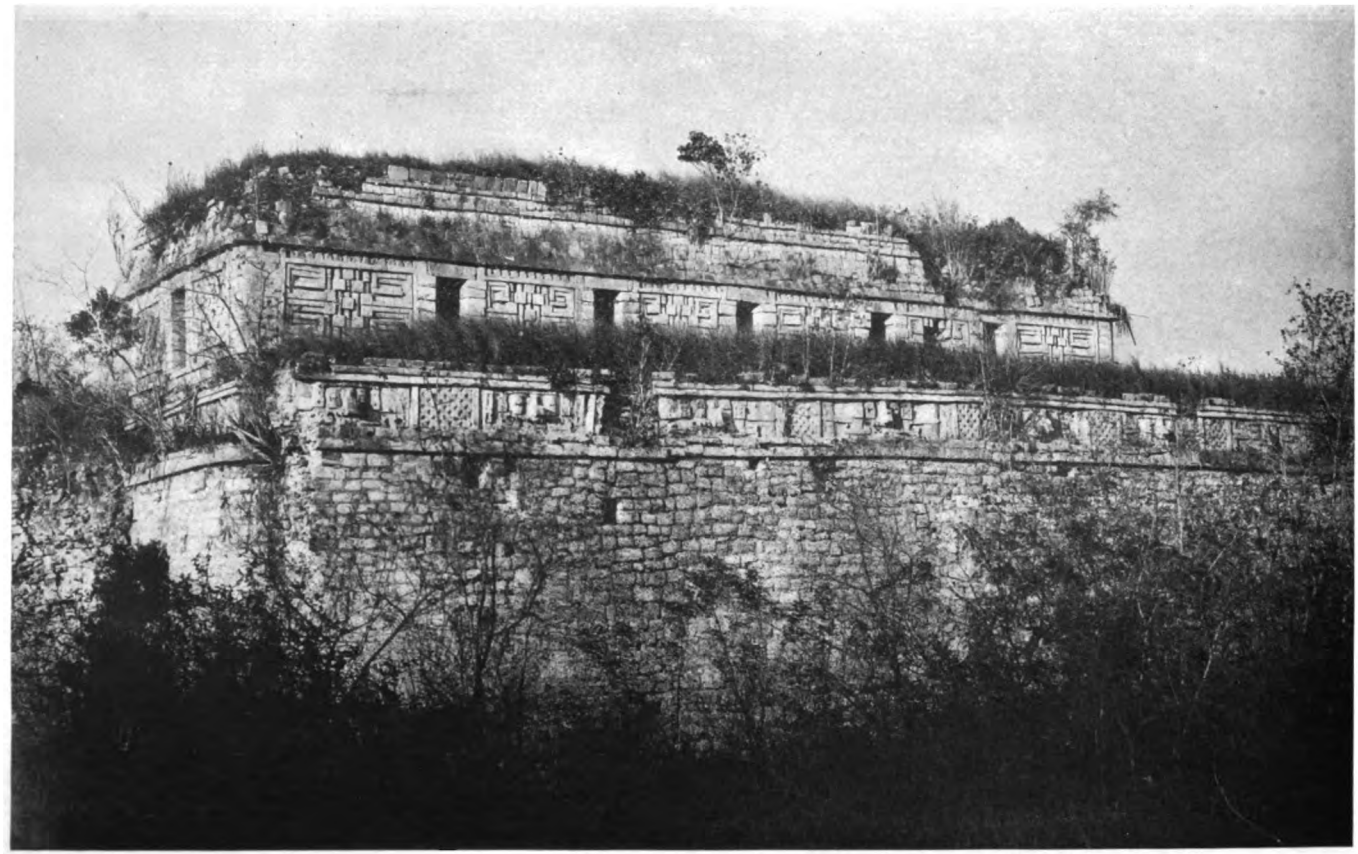

RUINS OF CHICHEN ITZA, STATE OF YUCATAN.
THE MONJAS OR MONASTERY (SO-CALLED). (BACK VIEW.)

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APPENDIX III.

VICEROYALTIES.

1.	D. Antonio de Mendoza	1535 to 1550
2.	D. Luis D. Velasco	1550 to 1564
3.	D. Gastón de Peralta	1566 to 1568
4.	D. M. Enriquez de Almanza	1568 to 1580
5.	Conde de la Coruña	1580 to 1583
6.	D. Pedro Moya de Contreras	1584 to 1585
7.	Marqués de Villa Manrique	1585 to 1590
8.	D. Luis de Velasco, el 2°	1590 to 1595
9.	Conde de Monterey	1595 to 1603
10.	Marqués de Montes Claros	1603 to 1607
11.	D. Luis de Velasco el 2°, 2° epoca	1607 to 1611
12.	Dn. Fray Garcia Guerra	1611 to 1612
13.	Marqués Guadalcazar	1612 to 1621
14.	Marqués de Galves	1621 to 1624
15.	Marqués de Cerralvo	1624 to 1635
16.	Marqués de Cadereyta	1635 to 1640
17.	Duque de Escalona	1640 to 1642
18.	D. Juan de Palafox y Mendoza	1642
19.	Conde de Salvatierra	1642 to 1648
20.	Marcos Torres y Rueda	1648 to 1649
21.	Conde de Alva de Liste	1650 to 1653
22.	Duque de Alburquerque	1653 to 1660
23.	Marqués de Leiva	1660 to 1664
24.	D. D. Osorio de Escobar y Llamas	1664
25.	Marqués de Mancera	1664 to 1673
26.	Duque de Veraguas	1673
27.	D. Fr. Payo de Rivera	1673 to 1680
28.	Marqués de la Laguna	1680 to 1686
29.	Conde de Monclova	1686 to 1688
30.	Conde de Galve	1688 to 1696
31.	J. Ortega y Montañéz	1696
32.	Conde de Moctezuma y Tula	1696 to 1701
33.	Duque de Alburquerque, 2° vez	1702 to 1711
34.	Duque de Linares	1711 to 1716
35.	Marqués de Valero	1716 to 1722
36.	Marqués de Casa Fuerte	1722 to 1734
37.	D. J. Antonio de Vizarrón	1734 to 1740
38.	Duque de la Conquista	1740 to 1741
39.	Conde de Fuenclara	1742 to 1744
40.	1ér. Conde de Revillagigedo	1746 to 1755
41.	Marqués de las Amarillas	1755 to 1760
42.	D. Francisco Cagigal	1760
43.	Marqués de Cruillas	1760 to 1766
44.	Marqués de Croix	1766 to 1771
45.	D. Antonio M. Bucareli	1771 to 1779
46.	D. Martin de Mayorga	1779 to 1783
47.	D. Matfas de Galvez	1783 to 1784
48.	D. Bernardo de Galvez	1785 to 1786
49.	D. Alonzo Nuñez de Haro	1787
50.	D. Manuel Antonio Flores	1787 to 1789
51.	2° Conde de Revillagigedo	1789 to 1794

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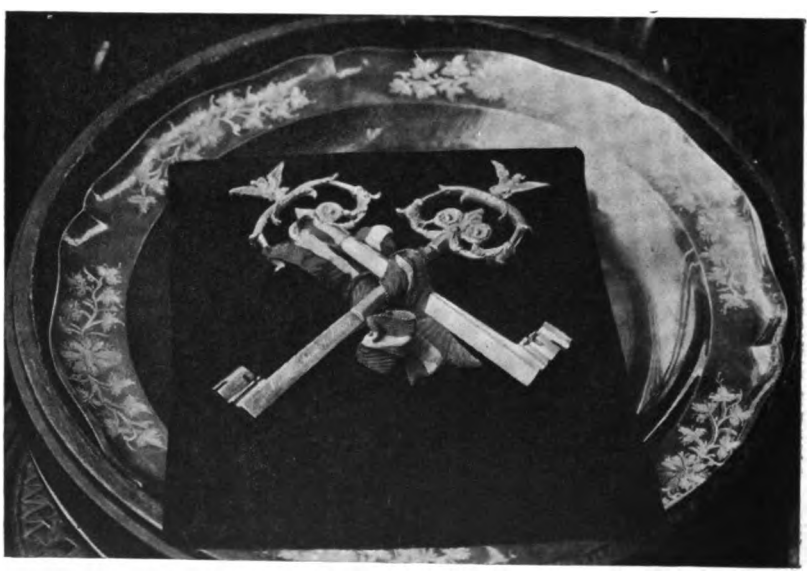
52. Marqués de Branciforte.....1794 to 1798
53. D. Miguel de Azauza.....1798 to 1800
54. F Berenguer de Marquina.....1800 to 1803
55. D. J. de Iturrigaray.....1803 to 1808
56. D. Pedro Garibay.....1808 to 1809
57. D. Franco Javier Lizana.....1809 to 1810
58. Francisco J. Venegas .....1810 to 1813
59. Félix M. Calleja.....1813 to 1816
60. Juan Ruiz de Apodaca.....1816 to 1821
61. D. Juan O'Donojú.....1821



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APPENDIX IV.

GOVERNMENTS SINCE INDEPENDENCE.

First Period.

First Regency—September 28, 1821, to April 11, 1822.

Second Regency—April 11, 1822, to May 18, 1822.

Augustin I, Emperor—Proclaimed May 18, 1822; took oath May 21, crowned July 21, 1822; abdicated March 19, 1823.

Provisional Government—The Marquis of Vivanco, political chief of Mexico, took charge on the abdication of Iturbide. Congress March 31, 1823, elected a Supreme Executive Council of Three, which entered upon its duties April 2, 1823.

Federal Republic.

Under the Constitution of October 4, 1824.

President—General Guadalupe Victoria, October 10, 1824, to April 1, 1829.

Vice-President—General Nicolas Bravo.

President—General Vicente Guerrero, April 1, 1829, to December 17, 1829.

Vice-President—General Anastacio Bustamente.

Acting President—Licentiate Jose Maria de Bocanegra, December 17, 1829, to December 23, 1829.

Supreme Executive Council—December 23, 1829, to December 31, 1829.

President—General Anastacio Bustamente, December 31, 1829, to August 14, 1832.

Acting President—General Melchor Muzquiz, August 14, 1832, to December 24, 1832.

President—General Manuel Gomez Pedraza, December 24, 1832, to April 1, 1833.

President—General Antonio Lopez de Santa-Anna, April 1, 1833, to January 28, 1835.

Vice-President—Don Valentin Gomez Farias, who acted as President during absences of Santa-Anna.

President—General Miguel Barragan, January 28, 1835, to February 27, 1836.

President—Licentiate Jose Justo Corro, February 27, 1836, to April 19, 1837.

Centralized Republic.

Under Constitution of January 1, 1837.

President—General Anastacio Bustamente, April 19, 1837, to March 18, 1839. On the latter date Bustamente was replaced by Santa-Anna. From July 10, to July 17, 1839, General Nicolas Bravo acted as President. Bustamente was in charge from July 17, 1839, to September 22, 1841, when Don Javier Echeverria was installed as Acting President. It is not even

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known how long Echeverria acted in that capacity, but it is supposed until about October 3, 1841.

DICTATORSHIP.

Under the Plan of Tacubaya.

PROVISIONAL PRESIDENT—General Antonio Lopez de Santa-Anna, October 10, 1841, to October 26, 1842.

SUBSTITUTE PRESIDENT—General Nicolas Bravo, October 26, 1842, to March 5, 1843.

PROVISIONAL PRESIDENT—General Antonio Lopez de Santa-Anna, March 5, 1843, to October 4, 1843.

SUBSTITUTE PRESIDENT—General Valentin Canalizo, October 4, 1843, to February 1, 1844.

SUBSTITUTE PRESIDENT—General Valentin Canalizo, February 1, 1844, to June 4, 1844. (Canalizo during this period was acting in place of Santa-Anna, who had been elected Constitutional President under the Organic Bases of June 12, 1843.)

CENTRALIZED REPUBLIC.

Under the Constitution of June 12, 1843.

PRESIDENT—General Antonio Lopez de Santa-Anna, June 4, 1844, to September 12, 1844.

ACTING PRESIDENT—General Jose Joaquin de Herrera, September 12, 1844, to September 21, 1844.

ACTING PRESIDENT—General Valentin Canalizo, September 21, 1844, to December 6, 1844.

PRESIDENT—General Jose Joaquin de Herrera, December 6, 1844, to December 30, 1845.

PRESIDENT—General Mariano Paredes y Arrillaga, January 4, 1846, to July 28, 1846.

PRESIDENT—General Nicolas Bravo, July 28, 1846, to August 4, 1846.

ACTING PRESIDENT—General Jose Mariano Salas, August 5, 1846, to December 24, 1846. By decree of August 22, 1846, the Constitution of 1824 was re-established.

FEDERAL REPUBLIC.

(Again) Under the Constitution of 1824.

VICE-PRESIDENT AND ACTING PRESIDENT—Don Valentin Gomez Farias, December 24, 1846, to March 21, 1847.

PRESIDENT—General Antonio Lopez de Santa-Anna, March 22, 1847, to April 1, 1847.

SUBSTITUTE PRESIDENT—General Pedro M. Anaya, April 1, 1847, to May 20, 1847.

PRESIDENT—General Antonio Lopez de Santa-Anna, May 20, 1847, to September 16, 1847.

PRESIDENT—Licentiate Manuel de la Peña y Peña, September 16, 1847, to November 14, 1847.

ACTING PRESIDENT—General Pedro M. Anaya, November 14, 1847, to January 8, 1848.

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PRESIDENT AND ACTING PRESIDENT—Don Manuel de la Peña y Peña, January 8, 1848, to June 2, 1848.

PRESIDENT—General Jose Joaquin de Herrera, June 2, 1848, to January 15, 1851.

PRESIDENT—General Mariano Arista, January 15, 1851, to January 5, 1853.

ACTING PRESIDENT—Don Juan B. Ceballos, January 5, 1853, to February 7, 1853.

DEPOSITORY OF THE EXECUTIVE POWER—General Manuel M. Lombardine, February 7, 1853, to April 20, 1853.

DICTATORSHIP.

PRESIDENT WITH FULL POWERS—General Antonio Lopez de Santa-Anna, April 20, 1853, to August 11, 1855.

GOVERNMENTS SUBSEQUENT TO THE REVOLUTION OF AYUTLA.

ACTING PRESIDENT—General Martin Carrera, August 14, 1855, to September 12, 1855.

IN CHARGE OF FEDERAL DISTRICT—General Rómulo Diaz de la Vega, September 12, 1855, to October 4, 1855.

ACTING PRESIDENT—General Juan Alvarez, October 4, 1855, to December 9, 1855.

SUBSTITUTE PRESIDENT—General Ignacio Comonfort, December 11, 1855, to December 1, 1857.

PRESIDENT—General Ignacio Comonfort, December 1, 1857, to December 19, 1857. (On the latter date, Comonfort joined a revolution against his own Government.)

PROVISIONAL PRESIDENT—Don Benito Juarez, December 19, 1857, to June 15, 1861.

PRESIDENT—Don Benito Juarez, June 15, 1861, to November 8, 1865.

PRESIDENT—Bon Benito Juarez, November 8, 1865, to December 25, 1867. President Juarez proclaimed himself for this term, as the occupancy of the country by the French and Imperialists rendered elections impossible.

PRESIDENT—Don Benito Juarez, December 25, 1867, to December 1, 1871.

PRESIDENT—Don Benito Juarez, December 1, 1871, to July 18, 1872 (died).

PRESIDENT—Sebastian Lerdo de Tejada, July 18, 1872, to December 1, 1872.

PRESIDENT—Sebastian Lerdo de Tejada, December 1, 1872, to November 21, 1876.

PROVISIONAL PRESIDENT—General Porfirio Diaz, November 28, 1876, to December 6, 1876.

IN CHARGE OF THE EXECUTIVE POWER—General Juan N. Mendez, December 6, 1876, to February 16, 1877.

PROVISIONAL PRESIDENT—General Porfirio Diaz, February 16, 1877, to May 5, 1877.

PRESIDENT—General Porfirio Diaz, May 5, 1877, to November 30, 1880.

PRESIDENT—General Manuel Gonzalez, December 1, 1880, to November 30, 1884.

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PRESIDENT—General Porfirio Diaz, December 1, 1884, to November 30, 1888. Also from December 1, 1888, to November 30, 1892; December 1, 1892, to November 30, 1896; December 1, 1896, to November 30, 1900; December 1, 1900, to November 30, 1904. December 1, 1904, to November 30, 1910; December 1, 1910, to May 25, 1911.

VICE-PRESIDENT SINCE DECEMBER 1, 1904—Don Ramon Corral to May 25, 1911.

PROVISIONAL PRESIDENT, Lic. Francisco Leon de la Barra, May 25, 1911.

DE FACTO GOVERNMENTS.

When General Comonfort joined, on December 19, 1857, a revolution against his own administration, he ceased to be President *de jure* and accepted the title of Provisional President.

A new Plan having been proclaimed on January 11, 1858, Comonfort was deposed by the troops, and an Assembly of Representatives elected as Provisional President Don Felix Zuloaga.

The Plan of Ayotla (not to be confused with Ayutla), December 20, 1858, placed Don Manuel Robles Pezuela in control of the situation, and he convoked a "popular assembly," which met on December 30, 1858, and designated Don Miguel Miramon as President and Robles Pezuela as Vice-President.

But Miramon repudiated this arrangement, and on January 24, 1859, reinstated Zuloaga.

However, by a decree of January 29, 1859, solemnly promulgated on February 1, 1859, Zuloaga designated Miramon as his substitute.

Miramon took possession on February 2, 1859, and *de facto* ruled Mexico until August 13, 1860.

On the latter date an Assembly of Representatives was convoked to appoint an acting President.

Pending the deliberations of the Assembly, Don Ignacio Pavon acted as President.

On August 14, 1860, the Assembly chose Miramon as acting President, and he took possession on August 15, 1860.

On December 25, 1860, Miramon fled from the capital, and early next year went abroad.

When President Juarez departed from the capital, on May 31, 1863, a *junta* was formed, which declared its acceptance of French intervention, while Don Jose Mariano Salas took temporary charge of civil and military administration.

On June 16, 1863, a *junta* was convoked by Forey, and this *junta* appointed a council to take charge of the Executive power, consisting of Don Juan N. Almonte, Archbishop Labastida, and Don Jose Mariano Salas, with Don Juan B. Ormaechea and Don Ignacio Pavon as substitute members.

On July 10, 1863, a *junta* of notables had accepted the proposed monarchy, with Maximilian as Emperor.

On July 11, 1863, the Executive Council changed its name into that of Regency of the Empire.

On April 10, 1864, Maximilian at Miramar accepted the imperial crown. On May 28, 1864, he landed at Veracruz, arrived at the capital June 12, 1864, and on June 19, 1867, he, with his two chief generals, Miramon and Mejia, was shot.

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APPENDIX V.

Alphabetical list of States, with post office abbreviations, their area and population, and altitude of their capitals.

States and Territories, with abbreviations.		Area, Square Miles.	Area, Square Kilometers.	Population, 1900.	Population, 1910.
Aguascalientes	Ags.	2,969	7,692	102,416	118,978
Campeche	Cam.	18,086	46,855	86,542	85,795
Chiapas	Chis.	27,222	70,524	360,799	436,817
Chihuahua	Chih.	89,974	233,094	327,784	405,265
Coahuila	Coah.	63,728	165,099	296,938	367,652
Colima	Col.	2,273	5,887	65,115	77,704
Durango	Dgo.	42,265	109,495	370,294	436,147
Guanajuato	Gto.	10,948	28,363	1,061,724	1,075,270
Guerrero	Gro.	24,996	64,756	479,205	605,437
Hidalgo	Hgo.	8,575	22,215	605,051	641,895
Jalisco	Jal.	33,486	86,752	1,153,891	1,202,802
Mexico	Mex.	8,949	23,185	934,463	975,019
Michoacan	Mich.	22,656	58,694	935,808	991,649
Morelos	Mor.	2,734	7,082	160,115	179,814
Nuevo Leon	N. L.	23,679	61,343	327,937	368,929
Oaxaca	Oax.	35,383	91,664	948,633	1,041,035
Puebla	Pue.	12,204	31,616	1,021,133	1,092,456
Querétaro	Qro.	4,492	11,638	232,389	243,515
San Luis Potosi	S. L. P.	24,000	62,177	575,432	624,748
Sinaloa	Sin.	27,553	71,380	296,701	323,499
Sonora	Son.	76,619	198,496	221,682	262,545
Tabasco	Tab.	10,072	26,094	159,834	183,708
Tamaulipas	Tam.	32,268	83,597	218,948	249,253
Tlaxcala	Tlax.	1,595	4,132	172,315	183,805
Veracruz	Ver.	29,283	75,863	981,030	1,124,368
Yucatan	Yuc.	18,565	48,097	309,652	337,020
Zacatecas	Zac.	24,467	63,386	462,190	475,863
Federal District	D. F.	579	1,499	541,516	719,052
L. California (Ter.)	B. Cfa.	58,328	151,109	47,624	52,244
Tepic (Ter.)	Tep.	10,951	28,371	150,098	171,837
Quintana Roo (Ter.)	Q. R.	16,638	43,104	Included in the State of Yucatan at this date	9,086
		765,537	1,983,259	13,607,259	15,063,207

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ALTITUDES OF THE CAPITALS OF THE STATES, FEDERAL DISTRICT AND THE TERRITORIES.

States.	Capital.	Feet.	Meters.
Aguascalientes	Aguascalientes	6,181	1,884
Campeche	Campeche	Sea level	Sea level
Chiapas	Tuxtla Gutierrez	1,594	486
Chihuahua	Chihuahua	4,759	1,451
Coahuila	Saltillo	5,397	1,676
Colima	Colima	1,476	450
Durango	Durango	6,207	1,892
Guanajuato	Guanajuato	6,759	2,060
Guerrero	Chilpancingo	4,526	1,380
Hidalgo	Pachuca	7,954	2,424
Jalisco	Guadalajara	6,069	1,850
Mexico	Toluca	8,610	2,624
Michoacan	Morelia	6,201	1,890
Morelos	Cuernavaca	5,428	1,654
Nuevo Leon	Monterrey	1,593	486
Oaxaca	Oaxaca	5,069	1,545
Puebla	Puebla	7,077	2,157
Queretaro	Queretaro	6,166	1,879
San Luis Potosi	San Luis Potosi	5,786	1,703
Sinaloa	Culiacan	112	34
Sonora	Hermosillo	776	236
Tabasco	San Juan Bautista	33	10
Tamaulipas	Ciudad Victoria	1,473	449
Tlaxcala	Tlaxcala	7,388	2,252
Veracruz	Jalapa	8,924	2,690
Yucatan	Merida	26	8
Zacatecas	Zacatecas	8,013	2,442
Federal District	Mexico	7,875	2,400
Territories			
Baja California	Ensenada (north)	Sea level	Sea level
	La Paz (south)	Sea level	Sea level
Quintana Roo	Santa Cruz de Bravo	23	7
Tepic	Tepic	3,123	952

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INDEPENDENCE MONUMENT DEDICATED IN MEXICO CITY, 16TH OF SEPTEMBER, 1910.

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APPENDIX VI.

CONSTITUTION

SANCTIONED AND SWORN BY THE GENERAL CONSTITUENT CONGRESS THE 5TH DAY OF FEBRUARY, 1857.

IGNACIO COMONFORT, Substitute President of the Mexican Republic, to its inhabitants, Know Ye:

That the extraordinary constituent Congress has decreed the following:

In the name of God and by the authority of the Mexican people.

The representatives of the different States, of the District and of the Territories which compose the Republic of Mexico, called upon by the provisions of the "plan" proclaimed in Ayutla the first of March, eighteen hundred and fifty-four, amended in Acapulco the eleventh day of the same month and year, and by the summons issued the seventeenth of October, eighteen hundred and fifty-five, to convene for the purpose of framing a constitution for the nation and making it a popular representative, democratic republic, exercising the powers with which they are vested, do hereby comply with the requirements of their high office, by decreeing the following:

CONSTITUTION

OF THE MEXICAN REPUBLIC ON THE INDESTRUCTIBLE BASIS OF ITS LEGITMATE INDEPENDENCE, PROCLAIMED THE 16TH OF SEPTEMBER, 1821.

TITLE I.

SECTION I.

The rights of man.

ARTICLE 1. The Mexican people recognize that the rights of man are the basis and the object of social institutions. Consequently they declare that all laws and all the authorities of the country must respect and maintain the guaranties which the present Constitution establishes.

The State and Church are independent of each other. The Congress shall not enact laws establishing or prohibiting any religion.*

ART. 2. In the Republic all are born free. Slaves who set foot upon the national territory recover, by that act alone, their liberty, and have a right to the protection of the laws.

Marriage is a civil contract. It and all other acts of the civil status of persons, are of the exclusive cognizance of the officials and authorities of the civil order (*del órden civil*), in the terms prescribed by the laws, and shall have the force and effect which the laws give them.*

ART. 3. Instruction is free. The law shall determine what professions require a diploma for their exercise, and what requisites are necessary to obtain said diplomas.

ART. 4. Every man is free to engage in any honorable and useful profession, industrial pursuit, or occupation suitable to him, and to avail himself of its products. The exercise of this liberty shall not be hindered except by judicial sentence when such exercise attacks the rights of a third party, or by executive order issued in the manner specified by law, when it offends the rights of society.

ART. 5. No one can be obliged to render personal service without just compensation and without his full consent, except work imposed as a penalty by judicial authority.

In regard to public service, that of bearing arms can only be obligatory, and the electoral functions, municipal offices and the duties of jury service, obligatory and gratuitous, in the terms established by the respective laws.

The State cannot permit effect to be given to any contract, pact or agreement having for its object the restraint, the loss, or the irrevocable sacrifice of the liberty of man, whether on account of work, of education or of religious vows.

The law, therefore, does not recognize monastic orders, and can not permit their establishment, whatever be the denomination or object for which they are sought to be established. Neither shall any contract be permitted in which a man stipulates for his own proscription or exile.†

*These additional paragraphs were added to Articles I and II by the decree (Amendment of September 25, 1873). By this same decree three other amendments were passed, but these have been incorporated respectively in Article 27, Article 121, and Article V of the present Constitution.

†Amendment of June 10, 1898.

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ART. 6. The expression of ideas shall not be the object of any judicial or executive investigation, except in case it attacks morality, the rights of a third party, provokes crime or misdemeanor, or disturbs public order.

ART. 7. The liberty to write and to publish writings on any subject is inviolable. No law or authority shall establish previous censorship, or require authors or printers to give bond, or restrict the liberty of the press, which has no other limits than respect of private life, morality, and the public peace. The crimes which may be committed by means of the press shall be tried by the competent Tribunals of the Federation, or by those of the States, of the Federal District and Territory of Lower California, according to their penal legislation.*

ART. 8. The right of petition, exercised in writing in a peaceful and respectful manner, is inviolable; but in political matters only citizens of the Republic may exercise it. To every petition an answer shall be given in writing, in the form of a decree, by the official to whom it may have been addressed, and the said official is bound to make the petitioner acquainted with the result.

ART. 9. No one shall be deprived of the right to peaceably associate or unite with others for any lawful purpose; but only citizens of the Republic are permitted to take part in the political affairs of the country. No armed reunion has the right to deliberate.

ART. 10. Every man has the right to possess and carry arms for his security and legitimate defense. The law shall designate what arms are prohibited, and the punishment to be incurred by those who carry them.

ART. 11. Every man has the right to enter and leave the Republic, to travel through its territory, and change his residence, without the necessity of a letter of security, passport, safe conduct, or other similar requisite. The exercise of this right shall not affect the legitimate faculties of the judicial or executive authorities in cases of criminal or civil responsibility, and to the limitations imposed by the law upon emigration, immigration and the general health of the country.†

ART. 12. No titles of nobility or prerogatives, or hereditary honors, are, or shall be recognized in the Republic. Only the people, legitimately represented, may decree recompenses in honor of those who have rendered or may render eminent services to the country or to humanity.

ART. 13. In the Mexican Republic no one shall be tried according to special laws, or by special tribunals. No person or corporation shall have privileges or enjoy emoluments which are not in compensation for a public service and established by law. Military jurisdiction shall be recognized only for the trial of criminal cases having strict connection with military discipline. The law shall clearly set forth the cases included in this exception.

ART. 14. No retroactive law shall be enacted. No person shall be tried or sentenced except under laws previously enacted, exactly applicable to the case, and by a tribunal previously established by law.

ART. 15. No treaty shall be made for the extradition of political offenders, or of offenders of the common class, who have been slaves in the country where the offense was committed; nor shall any agreement or treaty be entered into which abridges or modifies the guaranties and rights which this Constitution grants to the man and to the citizen.

ART. 16. No one shall be molested in his person, family, domicile, papers or possessions, except by virtue of an order in writing of the competent authority, setting forth the legal grounds upon which the measure is taken. In cases of *in flagrante delicto* any person may apprehend the offender and his accomplices, placing them without delay at the disposal of the nearest authorities.

ART. 17. No one shall be arrested for debts of a purely civil character. No one shall exercise violence in order to enforce his rights. The tribunals shall always be open for the administration of justice, which shall be gratuitous, judicial costs being consequently abolished.

ART. 18. Imprisonment shall take place only for crimes deserving corporal punishment. In any stage of the case in which it shall appear that such a punishment can not be imposed upon the accused, he shall be set at liberty on bail. In no case shall the imprisonment or detention be prolonged for failure to pay fees, or any other pecuniary charge.

ART. 19. No detention shall exceed the term of three days, unless justified by a warrant, issued in accordance to law, and giving the grounds for the imprisonment. The mere lapse of said time shall render the authority that orders or consents to it and the agents, ministers, wardens or jailors who execute it, responsible therefor. Any maltreatment in the apprehension or in the confinement of the prisoners, any molestation which may be inflicted without legal ground, or any tax or contribution in the prisons, is an abuse which the laws must correct and the authorities severely punish.

ART. 20. In every criminal trial the accused shall have the following guaranties:

I. That the grounds of the proceedings and the name of the accuser, if there shall be one, be made known to him.

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*Amendment of May 15, 1883. Offenses against the liberty of the press are punished by Arts. 966 and 967, of the Federal Penal Code of December, 1871.

†Amendment of 27 October, 1908. See Art. 72, fraction XXI and note 33 to same.

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II. That his preliminary examination be made within forty-eight hours, to be counted from the time he may be placed at the disposal of the judge.

III. That he be confronted with the witnesses who testify against him.

IV. That he be furnished with all the information on record, which he may need for his defense.

V. That he be heard in his defense, either personally or by counsel, or by both, as he may desire. In case he should have no one to defend him, a list of official counselors shall be shown to him, in order that he may choose one or more to act as his counsel.

ART. 21. The imposition of penalties properly so called belongs exclusively to the judicial authority. The political or executive authorities shall only have power to impose fines and imprisonment, as disciplinary measures, the former of no more than five hundred dollars, and the latter for no more than one month, in the cases and in the manner which the law shall expressly determine.

ART. 22. Punishments by mutilation and infamy, by branding, flogging, beating with sticks, torture of whatever kind, excessive fines, confiscation of property, or any other penalties, unusual, or working corruption of blood, shall be forever prohibited.

ART. 23. The penalty of death for political offenses is abolished. It can only be imposed, in regard to other crimes, upon the traitor to his country in foreign wars, upon the parricide, upon the murderer by treachery, with premeditation or for profit, upon kidnappers, highwaymen, pirates, and those guilty of grave offenses of the military order.*

ART. 24. No criminal case shall have more than three instances. No person, whether acquitted or condemned, shall be tried again for the same offense. Verdicts of not proven are abolished.

ART. 25. Correspondence sent through the mails is inviolable. The violation of this guaranty is an offense which the law shall punish severely.

ART. 26. In time of peace no soldier may demand quarters, supplies, or other real or personal service, without the consent of the proprietor. In time of war he may do so, but only in the manner prescribed by the law.

ART. 27. Private property cannot be occupied without the consent of the owner, except in cases of public utility, and with previous compensation. The law shall prescribe the authority which shall make the expropriation in such cases, and the requisite for its exercise.

Religious corporations and institutions, of whatever character, denomination, duration or object, and civil corporations which are under the patronage, direction or administration of the former, or of the ministers of any sect, shall have no legal capacity to acquire the ownership of or to administer any other real estate than the buildings which are destined immediately and directly to the service or purpose of such corporations or institutions. Neither shall they acquire or administer funds secured by real estate.

Civil corporations and institutions, other than as above prohibited, may acquire and administer, besides the foregoing buildings, such real estate and funds charged upon it, as may be required for their support and for the purpose for which they exist, but subject to the requisites and limitations which may be prescribed by the federal law which the Congress of the Union may enact for the purpose.*

ART. 28. There shall be no monopolies of any kind, whether governmental or private, nor prohibitions whatever even if under cover of protection to industry. The Government's exclusive right to coin money, and manage the postal service, and the privileges which, for a limited time, the law may concede to inventors or improvers of inventions, are exceptions to this rule.

ART. 29. In cases of invasion, grave disturbance of the public peace, or any other emergency which may place society in grave danger, the President of the Republic, and no one else, shall have the power to ssupend, with the advice of the council of ministers and with the approval of the Congress of the Union, and, in the recess thereof, of the Permanent Committee, the guaranties established by this Constitution, excepting those relating to the life of man; but such suspension, which in no case shall be confined in its effects to a particular individual, shall be made by means of a general order, or decree, and only for a limited time.

If the suspension takes place during the session of Congress, this body shall concede the authorizations which it may deem necessary in order that the Executive may properly meet the situation. If the suspension takes place during the recess, the Permanent Committee shall, without delay, call Congress to assemble in order that it may make the concession.

SECTION II.

Mexicans.

ART. 30. Mexicans are:

I. All those born, within or without the Republic, of Mexican parents.

II. Foreigners naturalized in conformity with the laws of the Federation.

III. Foreigners who acquire real estate in the Republic, or have Mexican children, if they do not declare their intention to retain their nationality of origin.

ART. 31. It is the obligation of every Mexican: I. To defend the independence, the territory, the honor, the rights and the interests of his country. II. To render

*Amendment of 14 May, 1901.

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his services in the Army or National Guard, according to the respective organic laws. III. To contribute to the public expenses, as well of the Federation as of the State and Municipality in which he lives, in the proportional and equitable manner which the laws shall prescribe.*

ART. 32. Mexicans shall be preferred under equal circumstances to foreigners, for all public employments, charges, or commissions, when the citizenship is not indispensable. Laws shall be enacted to improve the condition of industrious Mexicans, by rewarding those who distinguish themselves in any science or art, promoting labor, and founding colleges and manual training schools.

SECTION III.

Foreigners.

ART. 33. Foreigners are those who do not possess the qualifications determined in article 30. They have a right to the guaranties established by Section I, Title I, of the present Constitution, except that in all cases the Government has the right to expel pernicious foreigners. They are under obligation to contribute to the public expenses in the manner which the laws may provide, and to obey and respect the institutions, laws, and authorities of the country, subjecting themselves to the decisions of the tribunals, without power to seek other protection than that which the laws concede to Mexican citizens.

SECTION IV.

Mexican citizens.

ART. 34. Citizens of the Republic are all those who, in addition to the quality of Mexicans, have the following qualifications:

I. To have completed the age of eighteen years if they are married, or of twenty-one if not married.

II. To have an honest means of livelihood.

ART. 35. The prerogatives of the citizens are:

I. To vote at popular elections.

II. To be eligible for any office or position of popular election, and to be appointed to any other employment or commission, if they have the qualifications established by law.

III. To associate together to discuss the political affairs of the country.

IV. To take arms in the Army or National Guard in defense of the Republic and its institutions, in the terms prescribed by law.*

V. To exercise in all cases the right of petition.

ART. 36. It shall be the duty of every citizen of the Republic:

I. To register in the list of the inhabitants of the municipality in which he lives, stating the property which he owns, if any, or the industry, profession, or labor by which he subsists.

II. To enlist in the National Guard.

III. To vote at popular elections in the district to which he belongs.

IV. To fill the federal offices to which he may be elected, and which in no case shall be gratuitous.

ART. 37. The character of citizen is lost:

I. By naturalization in a foreign country.

II. By officially serving the government of another country or accepting its decorations, titles, or employment without previous permission from the Federal Congress; excepting literary, scientific, and humanitarian titles, which may be accepted freely.

ART. 38. The law shall determine the cases and the form in which the rights of citizenship may be lost or suspended, and the manner in which they may be regained.

TITLE II.

SECTION I.

National sovereignty and form of government.

ART. 39. The national sovereignty is vested essentially and originally in the people. All public power emanates from the people, and is instituted for their benefit. The people have at all times the inalienable right to alter or modify the form of thier government.

ART. 40. It is the will of the Mexican people to constitute themselves into a democratic, Federal, representative Republic, consisting of States, free and sovereign in all that concerns their internal government, but united in a federation according to the principles of this fundamental law.

ART. 41. The people exercise their sovereignty through the Federal powers in the matters belonging to the Union, and through those of the States in the matters relating to the internal régime of the latter. This power shall be exercised in the manner respectively established by the Constitutions, both Federal and State. The latter shall in no case contravene the stipulations of the Federal Compact.

*Amendment of 10 June, 1898.

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SECTION II.

Integral parts of the Federation and national territory.

ART. 42. The national territory comprises the integral parts of the Federation and the adjacent islands in both oceans.

ART. 43. The integral parts of the Federation are: The States of Aguascalientes, Campeche, Coahuila, Colima, Chiapas, Chihuahua, Durango, Guanajuato, Guerrero, Hidalgo, Jalisco, Mexico, Michoacan, Morelos, Nueva León, Oaxaca, Puebla, Querétaro, San Luis Potosi, Sinaloa, Sonora, Tabasco, Tamaulipas, Tlaxcala, Valle de Mexico, Veracruz, Yucatan, Zacatecas, the Territory of Baja California (Lower California), the Territory of Tepic (formed from the seventh Cantón of Jalisco), and the Territory of Quintana Roo.*

The territory of Quintana Roo shall be formed from the eastern portion of the peninsula of Yucatán, which latter shall be bounded by a dividing line which, starting from the north coast of the Gulf of Mexico, follows the arch of the meridian 87° 32′ (longitude west from Greenwich), to its intersection with the 21st parallel, and thence continues until its juncture with the parallel which passes through the tower south of Chemax, twenty kilometers to the east of this point; and proceeding thence to the vertex of the angle formed by the lines which divide the States of Yucatán and Campeche, near Put, thence southward to the parallel forming the boundary between the Republics of Mexico and Guatemala.

ART. 44. The States of Aguascalientes, Chiapas, Chihuahua, Durango, Guerrero, Mexico, Puebla, Querétaro, Sinaloa, Sonora, Tamaulipas, and the Territory of Lower California, shall preserve the limits which they now have.

ART. 45. The States of Colima and Tlaxcala shall preserve in their new character of States the limits which they had as Territories of the Federation.

ART. 46. The State of the Valley of Mexico shall consist of the territory constituting at present the Federal District, but it shall not be a State until after the supreme Federal Powers move to some other place.

ART. 47. The State of Nuevo León and Coahuila shall comprise the territory formerly belonging to the two separate States of which it now consists, except a part of the Bonanza Hacienda, which shall be added to Zacatecas, exactly as it was before its annexation to Coahuila.

ART. 48. The States of Guanajuato, Jalisco, Michoacan, Oaxaca, San Luis Potosi, Tabasco, Vera Cruz, Yucatán, and Zacatecas shall recover the extent and limits which they had on the thirty-first of December, eighteen hundred and fifty-two, with the alterations established in the following article.

ART. 49. The town of Contepec, now belonging to Guanajuato, shall be annexed to Michoacan. The municipality of Ahualulco, belonging to Zacatecas, shall be annexed to San Luis Potosi. The municipalities of Ojo Caliente and San Francisco de los Adames, belonging to San Luis, as well as the towns of Nueva Tlaxcala and San Andrés del Teul, belonging to Jalisco, shall be annexed to Zacatecas. The department of Túxpam shall continue to form a part of Vera Cruz. The canton of Huimanguillo, belonging to Vera Cruz, shall be annexed to Tabasco.

TITLE III.

DIVISION OF POWERS.

ART. 50. The supreme power of the Federation is divided for its exercise into legislative, executive, and judicial. Two or more of these powers shall never be united in one person or corporation, nor shall the legislative power be vested in one individual.

SECTION I.

Of the Legislative Power.

ART. 51. The Legislative Power of the Nation shall be vested in a General Congress, which shall be divided into two Chambers, one of Deputies and the other of Senators.†

PARAGRAPH I.

Of the Election and Installation of the Congress.

ART. 52. The Chamber of Deputies shall be composed of representatives of the Nation, elected entirely anew every two years, by the Mexican citizens.‡

ART. 53. There shall be elected one proprietary Deputy for each sixty thousand inhabitants or fraction over twenty thousand, according to the general census of the Federal District and that of each State and Territory. The population of any State or Territory which is less than that herein fixed, will, nevertheless, elect one proprietary Deputy.†

ART. 54. For each representative there shall be elected one substitute.

*Amendment of 24 November, 1902.
†Amendment of 13 November, 1874.
‡Amendment of 18 December, 1901.

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ART. 55. The election of representatives shall be indirect in the first degree, and by secret ballot, in the manner which the electoral law shall provide.

ART. 56. Representatives shall have the following qualifications: To be Mexican citizens in the enjoyment of their rights; to be twenty-five years of age on the day of the opening of the session; to be residents of the State or Territory in which the election is held, and not to belong to the ecclesiastical state. Residence is not lost by absence in the discharge of a public office of popular election.

ART. 57. The positions of Deputy and Senator are incompatible with any commission or employment of the Union for which a salary is received.

ART. 58. Proprietary Deputies and Senators, from the day of their election until the end of their term, cannot accept any commission or employment within the nomination of the Federal Executive, to which a salary is attached, without the previous license of their respective Chambers. The same requisite is necessary for the Substitute Deputies and Senators during service.*

A. The Senate shall be composed of two Senators for each State and two for the Federal District. The election of Senators shall be indirect in the first degree. The Legislature of each State shall declare elected him who shall obtain the absolute majority of the votes cast, or shall choose between those who shall have obtained a relative majority, under the terms prescribed by the electoral law. For each Senator a Substitute (*suplente*) shall be elected.

B. The Senate shall be renewed one-half every two years. The Senators chosen for the second class (*en segundo lugar*), shall cease at the end of the first two years, and thereafter the older ones (*y en lo sucesive los más antiguos*).

C. To be eligible as Senator the same qualifications are required as for Deputy, except that of age, which shall be full thirty years on the day of the opening of the sessions.*

ART. 59. The Deputies and Senators shall be inviolable for their opinions expressed in the discharge of their functions, and shall never be called to account for them.*

ART. 60. Each Chamber shall be the judge of the election of its members, and shall decide any questions which arise in regard thereto.*

ART. 61. The Chambers cannot open their sessions nor exercise their trust without the concurrence, in the Senate, of two-thirds, and in the Chamber of Deputies, of more than one-half, of the total number of their members; but those present of both Chambers shall convene on the day appointed by law, and compel the attendance of absent members, under the penalties provided by law.*

ART. 62. The Congress shall hold two ordinary sessions each year; the first shall begin on the 16th day of September and end on the 15th day of December, but may be prolonged (*prorrogable*) for thirty business days (*días útiles*); and the second, which may be prolonged for fifteen business days, shall begin on the 1st of April and end on the last day of the month of May.*

ART. 63. At the opening of the sessions of the Congress the President of the Union shall be present and make a speech in which he shall give information of the state of the country. The president of the Congress shall reply in general terms.

ART. 64. Every resolution of the Congress shall have the character of a law or of a decree (*tendrá el carácter de una ley ó decreto*). The laws and decrees shall be communicated to the Executive, signed by the Presidents of both Chambers, and by a secretary of each of them, and shall be promulgated in this form: "El Congreso de los Estados-Unidos Mexicanos, decreta": "The Congress of the Mexican United States decrees" (text of the law or decree).*

PARAGRAPH II.

Origin and Formation of the Laws.

ART. 65. The right to originate legislation belongs:

I. To the President of the Union.

II. To the members of Congress.

III. To the legislatures of the States.

ART. 66. Bills introduced by the President of the Republic, or by the legislatures or deputations of the States, shall immediately be referred to the proper committee. Those introduced by Deputies or Senators shall be subject to the procedure established by the rules.

ART. 67. Every bill (*proyecto de ley ó de decreto*) for a law or for a decree which shall be rejected by the Chamber of its origin before passing to the Revising Chamber, cannot be again presented during the sessions of the year.*

ART. 68. The second period of sessions shall be devoted with preference over all other matters, to the making of the necessary appropriations for the support of the Government in the following fiscal year, the levying of the taxes necessary to meet the expenses, and the examination of the accounts of the past year submitted by the Executive.

ART. 69. The day before the last of the first session, the Executive shall present to the Chamber of Deputies the estimates (*proyecto de presupuestos*) for the next

*Amendment of 13 November, 1874. See in connection with this, clauses C, D and E of Art. 71, as amended on the same date.

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following year, and the accounts for the previous year. Both shall pass to a Committe of five Representatives, appointed on the same day, which shall have the obligation of examining both documents and presenting a report on them, at the second day of the second session (*en la segunda sesión del segundo período*).*

ART. 70. The framing of laws and decrees may begin indiscriminately in either of the two Chambers, with the exception of Bills concerning loans (*los proyectos que versaren sobre empréstitos*), taxes or duties, or the recruiting of troops, all of which must be first discussed in the Chamber of Deputies.*

ART. 71. Every project of law or of decree, the resolution of which does not belong exclusively to one of the Chambers, shall be discussed successively in both, observing the rules of debate in respect to the form, time (*intervalos*) and method of procedure in the discussion and casting of votes.†

A. Upon approval of a bill in the Chamber of its origin, it shall pass for discussion to the other Chamber. If the latter approves it, it shall be remitted to the Executive who, if he has no observations to make, will publish it immediately.

B. Every bill shall be considered as approved by the Executive, if not returned with his objections (*observaciones*) to the Chamber where it originated, within ten business days (*días útiles*), provided, that within such term the Congress shall not have adjourned or suspended its sessions, in which event the bill shall be returned on the first business day on which it is in session.

C. The bill for a law or decree which has been rejected in whole or in part by the Executive, shall be returned with his objections to the Chamber of its origin. It shall be discussed anew by this Chamber, and if it should be confirmed by an absolute majority of votes, it shall pass again to the revisory Chamber. If it should be sanctioned by the latter by an absolute majority of votes, the bill becomes a law or decree, and shall return to the Executive for his promulgation. The voting upon a law or decree shall be by roll-call and recorded (*nominales*).

D. If any bill for a law or decree should be rejected in its entirety by the Chamber of Revision, it shall return to that of its origin with the observations which the former shall have made to it. If upon examination *de novo*, it should be approved by the absolute majority of the members present, it shall return to the Chamber which rejected it, which shall take it again into consideration, and if it should approve it by the same majority, it shall pass to the Executive for the purpose mentioned in fraction A; but if disapproved, it cannot be again presented until the following sessions.

E. If a bill for a law or decree should be rejected only in part, or modified or amended by the revisory Chamber, the new discussion in the Chamber of its origin shall be confined solely to the parts rejected, or to the reforms or amendments, without altering in any manner the Articles approved. If the additions or amendments made by the revisory Chamber should be approved by the absolute majority of the votes present in the Chamber of its origin, the entire bill shall pass to the Executive for his action under fraction A. But if the additions or amendments made by the revisory Chamber should be rejected by the majority of votes in the Chamber of its origin, they shall return to the former in order that it may take into consideration the reasons of the latter, and if by an absolute majority of the votes present, said additions or amendments should be rejected upon this second revision, the bill, so far as it shall have been approved by both Chambers, shall pass to the Executive for his action under fraction A. But if the revisory Chamber should insist, by the absolute majority of the votes present, upon said additions or amendments, the entire bill cannot be again presented until the following sessions, unless both Chambers concur, by an absolute majority of their members present, that the law or decree shall be enacted with only the Articles approved, and that those added or amended shall be reserved for their examination and vote at the following sessions.

F. In the interpretation, amendment or repeal (*reforma ó derogación*) of laws or decrees, the same procedure shall be observed as is established for their enactment.

G. Both Chambers shall convene (*residirán*(in the same place, and cannot remove to another, unless they shall previously agree upon such removal (*traslación*) and upon the time and manner of carrying it into effect, designating the same point for the convening of both Chambers. But if the two Chambers agree upon the removal, and differ in regard to the time, manner or place, the Executive shall end the difference, selecting one of the alternatives (*extremos*) in dispute. Neither Chamber shall suspend its sessions for more than three days, without the consent of the other.

H. When the General Congress shall convene in extraordinary sessions, it shall occupy itself exclusively with the object or objects designated in the proclamation convening it; and if it shall not have finished them by the day on which the ordinary sessions should begin, it shall nevertheless adjourn, leaving the pending matters to be treated in the latter.

The Executive of the Union cannot interpose objections (*hacer observaciones*) to the resolutions of Congress, when it prorogues it sessions, or exercises the functions of an electoral body or of a jury.*

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*Amendment of 13 November, 1874.

†The *Reglamento de Debates* governing both Chambers, is that passed 20 December, 1897, which went into effect 1 September, 1898.

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PARAGRAPH III.

Powers of Congress.

ART. 72. The Congress has power:

I. To admit new States or Territories into the Federal Union, incorporating them in the nation.

II. To turn Territories into States when they shall have a population of eighty thousand inhabitants and the necessary elements to provide for their political existence.

III. To form new States within the limits of the existing ones, for which purpose it shall be necessary: 1. That the fraction or fractions seeking to be erected into a State shall have a population of at least one hundred and twenty thousand inhabitants: 2. That it be proven before the Congress that they possess the elements sufficient to provide for their political existence; 3. That the Legislatures of the States whose territory is involved be heard concerning the convenience or inconvenience of the formation of the new State, and they shall be obliged to render their report within six months, counted from the day that the respective communication was forwarded to them; 4. That the Executive of the Federation be likewise heard, who shall transmit his report within seven days, counted from the date on which he shall be requested for it; 5. That the erection of the new State be adopted by the vote of two-thirds of the Deputies and Senators present in their respective Chambers; 6. That the resolution of the Congress be ratified by the majority of the Legislatures of the States, with a copy of the record before them; provided, that the Legislatures of the States whose territory is involved shall have given their consent; 7. If the Legislatures of the States whose territory is involved shall not have given their consent, the ratification mentioned in the foregoing fraction, shall be given by two-thirds of the Legislatures of the other States.*

IV. To settle finally the limits of the States, terminating the differences which may arise between them relative to the demarcation of their respective territories, except when the differences are of judicial character.

V. To change the residence of the supreme powers of the Federation.

VI. To legislate in respect to all matters concerning the Federal District and Territories.†

VII. To impose taxes necessary to meet the Budget.

VII. To establish the bases upon which the Executive may make loans on the credit of the nation; to approve said loans and to recognize and order the payment of the national debt.

IX. To enact laws fixing the duties to be levied on foreign commerce, and prevent, by general provisions, onerous restrictions from being established on the commerce between the States.

X. To enact codes of mining and commerce, the latter including banking institutions, obligatory throughout the Republic‡

XI. To create or abolish Federal offices, and to fix, increase, or decrease their salaries.

XII. Abolished. See B (of this article) II.

XIII. Abolished. See B I.

XIV. To declare war, upon examination of the facts submitted by the Executive.

XV. To regulate the manner in which letters of marque may be issued; to enact laws according to which the prizes on sea and land shall be adjudged good or bad; and to frame the maritime law of peace and war.

XVI. Abolished. See B III.

XVII. Abolished. See B III.

XVIII. To raise and maintain the army and navy of the Union, and regulate their organization and service.

XIX. To make rules for the organization, armament, and discipline of the national guard, reserving respectively to the citizens who compose it the appointment of the commanders and officers, and to the States the power of instructing it in conformity with the discipline prescribed by said regulations.

XX. Abolished. See B IV.

XXI. To enact laws in regard to citizenship, naturalization, colonization, emigration, immigration and the general health of the country.§

XXII. To enact laws in regard to general ways of communication and in regard to posts and post offices; to define, to determine what are the waters under federal jurisdiction, and to enact laws upon the use and utilization of the same.§§

XXIII. To establish mints, regulate the value and kinds of the national coin, determine the value of foreign coins, and adopt a general system of weights and measures.

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*Frac. III of Art. 72, as amended by the law of 13 November, 1874.

†Amendment of 31 October, 1901.

‡Amendment of 14 December, 1883.

§Amendment of 27 October, 1908. The present law in regard to citizenship and naturalization is the *Ley de Extranjeria*, of 28 May, 1886, herein published. Since the above amendment, there has been enacted a general law regulating emigration, immigration and general health, of 25 February, 1909, and the *Reglamento del Servicio é Inspección de Immigrantes*, of the same date.

§§Amendment of June 20, 1908.

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XXIV. To make rules for the occupation and sale of public lands and the prices thereof.

XXV. To grant pardons for offenses subject to federal jurisdiction.

XXVI. To grant rewards or recompenses for eminent services rendered to the country or to humanity.*

XXVII. To extend for thirty working days the first period of its ordinary sessions.

XXVIII. To make rules for its internal government and take the necessary measures to compel the attendance of absent Deputies and punish the faults or omissions of those present.

XXIX. To enact the laws governing the General Auditing Department. (See C III and A III.)

XXX. To enact all laws which may be necessary and proper to enforce the foregoing powers and all others granted by this Constitution to the authorities of the Union.

A. The exclusive powers of the Chamber of Deputies are:

I. To constitute itself into an Electoral College in order to exercise the powers prescribed by law in respect to the election of President and Vice-President of the Republic, Magistrates of the Supreme Court of Justice, and Senators for the Federal District.†

II. To consider (*calificar*) and decide upon the resignations and leaves of absence of the President and Vice-President of the Republic, and upon the resignations of the Magistrates of the Supreme Court of Justice.‡

III. To oversee by means of an investigating committee of its own number, the faithful discharge of the functions of the General Auditing Department. (*Contaduría Mayor*).

IV. To appoint the superior officers and other employés of the same.

V. To constitute itself a jury of impeachment (*jurado de acusación*) for the higher functionaries mentioned in Art. 103 of this Constitution.

VI. To examine the account which the Executive shall present annually, approve the annual estimates of expenses, and to initiate the taxes (*contribuciones*) which in its judgment should be levied to cover them.

B. The exclusive powers of the Senate are:

I. To approve the treaties and diplomatic conventions which the Executive may conclude with foreign powers.

II. To ratify the appointments which the President of the Republic may make of ministers, diplomatic agents, consuls general, superior employés of the Treasury, colonels and other superior chiefs of the army and national fleet, in the terms provided by law.

III. To authorize the Executive to permit the departure of national troops out of the limits of the Republic, the passage of foreign troops through the national territory, and the stay of vessels of another power, for more than one month in the waters of the Republic.

IV. To give its consent for the Executive to dispose of the national guard outside of its respective States and Territories, determining the necessary force.

V. To declare, when the constitutional Executive and Legislative Powers of a State shall have disappeared, that the case has arisen for appointing a Provisional Governor for it, who shall call elections according to the constitutional laws of such State. The appointment of the Governor shall be made by the Federal Executive, with the approbation of the Senate, or during its recesses, with that of the Permanent Commission. Said official shall not be elected constitutional Governor in the elections which may be held by virtue of the call which he shall issue.

VI. To settle the political questions which may arise between the Powers of a State, whenever any of them shall apply to the Senate for that purpose, or when by reason of such questions, the constitutional order shall be interrupted through a conflict of arms. In such case, the Senate shall declare its judgment, in accord with the General Constitution of the Republic and with that of the State. The law shall regulate the exercise of this and the foregoing powers.

VII. To constitute itself a Jury of Judgment (*erigirse en jurado de sentencia*) in accordance with Art. 105 of the Constitution.

C. Each one of the Chambers may, without the intervention of the other:

I. Dictate economic resolutions relative to its interior regimen.

II. Communicate between themselves and with the Executive, through committees of its own body.

III. Appoint the employés of its clerical force and provide for the internal regulation of the same.

IV. Issue proclamation (*convocatoria*) for extraordinary elections in order to fill vacancies in its membership.§

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*Amendment of 2 June, 1882.

†Amendment of 6 May, 1904, which for the first time created the office of Vice-President under the present Constitution. The Law of 24 May, 1904, treats of the functions of the Chamber as an electoral body.

‡Amendment of 6 May, 1904.

§Amendments of 13 November, 1874.

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PARAGRAPH IV.

Of the Permanent Deputation.

ART. 73. During the recesses of the Congress of the Union, there shall be a Permanent Committee, composed of twenty-nine members, of whom fifteen shall be Deputies and fourteen Senators, named by their respective Chambers on the eve of the close of the sessions.*

ART. 74. The attributes of the Permanent Deputation, besides others conferred in this Constitution, are the following:

I. To give its consent for the use of the national guard, in the cases mentioned in Art. 72, frac. XX.

II. To issue of its own motion, or on that of the Executive, he being heard in the first instance, the proclamation for the Congress, or only one Chamber of it, to convene in extraordinary session; in both cases the vote of two-thirds of the individuals present being necessary. The proclamation shall state the object or objects of the extraordinary session.*

III. To approve the appointments referred to in Art. 85, frac. III.

IV. To receive the oath of the President of the Republic, and of the members of the Supreme Court of Justice, in the cases provided by this Constitution.†

V. To report upon all unfinished business on the calendars, so that the following Legislature may immediately have material upon which to work.

SECTION II.

Executive Power.

ART. 75. The exercise of the supreme executive power of the Union is vested in a single individual, who shall be called "President of the United Mexican States."

ART. 76. The election of President shall be indirect in the first degree, and by secret ballot, in such manner as may be prescribed by the electoral law.

ART. 77. In order to be President it is required to be: a Mexican citizen by birth, in the exercise of his rights, or thirty-five years of age completed at the time of the election, to belong to no ecclesiastic order (*estado*), and to reside in the country at the time of the election.

ART. 78. The President and the Vice-President of the Republic shall enter upon the exercise of their functions on the 1st of December, and shall continue in their office six years.‡

ART. 79. The electors who choose the President of the Republic, shall also on the same day and in the same manner, elect as Vice-President a citizen having the same qualifications (*en quién concurran las condiciones*) as required for President by Art. 77.

The Vice-President of the Republic shall be President ex officio (*nato*) of the Senate, with the right of debate (*con voz*), but without a vote, except in cases of a tie (*en caso de empate*). The Vice-President may, however, hold any other office (*desempeñar algún encargo*) within the appointment of the Executive, and in such event, as well as when he is otherwise in default (*lo mismo que en sus otras faltas*) shall be substituted in the presidency of the Senate in the manner which may be prescribed by law.‡

ART. 80. When the President of the Republic shall not be present on the day designated by law to take possession of his office, when he shall be in absolute default, or when leave is granted him to withdraw from his functions, the Vice-President of the Republic shall assume the exercise of the Executive Power, by virtue of law (*por ministerio de la ley*) without the necessity of a new protest.

If the default of the President shall be absolute, the Vice-President shall substitute him until the end of the term for which he was elected, and in the other cases until the President shall present himself to discharge his functions.

ART. 81. If at the beginning of a constitutional term, neither the President nor Vice-President elect shall present himself, or if the election should not be held and declared on the 1st of December, the President whose term has expired shall nevertheless cease to act, and the Secretary of State for Foreign Relations shall at once assume the Executive Power in the character of President *ad interim*, and if there should be no such Secretary, or if he should be prevented from doing so, one of the other Secretaries, following the order of the law which establishes their number.

The same procedure shall be observed where, in case of the absolute or temporary default of the President, the Vice-President does not present himself; when leave shall be granted him to withdraw from his functions, if he be discharging them,

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*Amendment of 13 November, 1874.

†It is interesting to note that the religious oath was entirely abolished in all matters by the Reform Law of 25 September and 4 October, 1873; the first providing that "the simple promise to speak the truth and to fulfill the obligations contracted, shall take the place of the religious oath, with its effects and penalties." The later law prescribes the forms of affirmation (*protesta*) to be taken by the President and other principal officials. The effective words are: *"Yo protesto."* This affirmation is called *"la protesta de ley."* Falsely taken, it is perjury. See Art. 130, frac. IV.

‡Amendment of 6 May, 1904.

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and if in the course of a term, an absolute default of both functionaries should occur.

In the event of the absolute default of the President and of the Vice-President, the Congress of the Union, or during its recesses, the Permanent Committee, shall at once issue a call for extraordinary elections.

When the default of one and the other functionary shall occur in the last year of a term, such call shall not be made, but the Secretary who is exercising the Executive Power shall continue in its exercise until possession is taken by the new President, or by the person who substitutes him in accordance with the foregoing precepts.

The citizens chosen in the extraordinary elections shall take possession of their offices immediately upon the announcement of the results, and shall exercise them for the time which remains until the expiration of the constitutional period.

When one of the Secretaries of State shall assume the Executive Power, he shall exercise it without the necessity of protest, until he makes it (*entretanto la otorga*).*

ART. 82. The office of President and Vice-President of the Republic can only be resigned for grave cause, which shall be passed upon by the Chamber of Deputies, before which the resignation shall be presented.*

ART. 83. The President, upon taking possession of his office, shall make before the Congress, or in its recesses before the Permanent Committee, the following affirmation (*protesta*): "I affirm (*protesto*) without any reservation that I will keep and cause to be kept (*guardar y hacer guardar*) the Political Constitution of the Mexican United States, together with its additions and amendments, the Laws of the Reform, and all others which shall be enacted in pursuance thereof (*que de aquella amanen*) and that I will discharge loyally and patriotically the office of President of the Republic which the people have conferred on me, in all things looking to the welfare and prosperity of the Union."

The Vice-President shall make the affirmation at the same session, in like terms, to discharge the Vice-Presidency, and if the event occurs, the Presidency of the Republic; but if he should be prevented from making the affirmation at that session, he shall make it at another.*

ART. 84. The President and the Vice-President of the Republic cannot absent themselves from the national territory without the permission of the Chamber of Deputies.*

ART. 85. The powers and duties of the President are the following:

I. To promulgate and execute the laws passed by the Congress of the Union, providing, within the Executive sphere, for their exact observance.

II. To appoint and remove freely the Secretaries of State, to remove the diplomatic agents and superior officers of the treasury, and to appoint and remove freely the other federal officials whose appointment or removal is not otherwise provided for in the Constitution or the laws.

III. To appoint, with the approval of Congress, and, in its recess, of the Permanent Committee, ministers, diplomatic agents, and consuls-general.

IV. To appoint, with the approval of Congress, colonels and other superior officers of the national army and navy, and superior officers of the treasury.

V. To appoint all other officers of the national army and navy, according to the laws.

VI. To dispose of the permanent land and sea forces for the security and defense of the Federation.

VII. To dispose of the national guard for the same purposes, in the manner provided by article 72, clause XX.

VIII. To declare war in the name of the United Mexican States, after the passage of the necessary law by the Congress of the Union.

IX. To grant letters of marque, upon the bases fixed by the Congress.

X. To conduct diplomatic negotiations and to make treaties with foreign powers, submitting them for ratification to the Federal Congress.

XI. To receive ministers and other envoys from foreign powers.

XII. To call, upon resolution of the Permanent Committee, an extra session of Congress.

XIII. To give the judicial power the assistance which may be necessary for the free exercise of its functions.

XIV. To open all classes of ports, establish maritime and frontier custom-houses and designate their location.

XV. To grant, according to law, pardons to criminals sentenced for offenses within the jurisdiction of the Federal tribunals.

XVI. To grant exclusive privileges for a limited time and in accordance with the laws, to discoverers, inventors or to the improvers of any branch of industry.†

ART. 86. For the transaction of the business of the executive department of the Federation there shall be the number of secretaries which the Congress may fix by law, said law to provide also for the distribution of business among the different secretaries.

ART. 87. No person shall be appointed Secretary who is not a Mexican citizen by birth, in the exercise of his rights, and twenty-five years old.

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*Amendment of 6 May, 1904.

†Amendment of 2 June, 1882.

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ART. 88. All rules, decrees, and orders of the President shall be signed by the Secretary of the department to which the subject belongs. Without this requisite they shall not be obeyed.

ART. 89. The Secretaries shall, as soon as the sessions of the first period are opened, render an account to the Congress of the state of their respective departments.

SECTION III.

Judicial Power.

ART. 90. The judicial power of the Federation is vested in a supreme court and in the district and circuit courts.

ART. 91. The Supreme Court of Justice shall be composed of fifteen members, who shall sit *en Banc* or in Divisions (*funcionará en Tribunal pleno ó en Salas*), in the manner prescribed by law.*

ART. 92. The justices of the supreme court shall serve for six years, and their election shall be indirect in the first degree, in the manner established by the electoral law.

ART. 93. No person shall be eligible to the position of justice of the supreme court who, in the judgment of the electors, is not learned in the science of law, thirty-five years of age, and a Mexican citizen by birth, in the exercise of his rights.

ART. 94. The justices of the supreme court shall, on entering upon the exercise of their functions, take an oath before Congress, and, in its recesses, before the Permanent Committee, in the following form: "Do you swear to perform loyally and patriotically the functions of justice of the supreme Court of justice, which the people have conferred upon you, in conformity with the Constitution, having always in view the welfare and prosperity of the Union?"

ART. 95. No resignation of the position of justice of the supreme court shall be admitted, except for grave cause, approved by the Congress, to whom the resignation shall be tendered. In the recesses of the Congress the power to act on this matter belongs to the Permanent Committee.

ART. 96. The law shall establish and organize the circuit and district courts, and the *Ministerio Público* of the Federation. The officials of the *Ministerio Público* and the Attorney General (*Procurador General*) of the Republic, who shall be its principal officers, shall be appointed by the President.*

ART. 97. The Federal tribunals shall take cognizance of:

I. All controversies which may arise in regard to the compliance with and application of the Federal laws, except in the case that such application only affects the interests of private persons, in which event the local judges and tribunals of the common order of the States, of the Federal District and of the Territory of Lower California, shall be competent to hear and decide them.†

II. All cases pertaining to maritime law.

III. All cases to which the Federation may be a party.

IV. All cases which may arise between two or more States.

V. All cases which may arise between a State and one or more citizens of another State.

VI. All civil or criminal cases that may arise out of treaties with foreign powers.

VII. All cases concerning diplomatic agents and consuls.

ART. 98. The supreme court shall have original jurisdiction of controversies which may arise between one State and another, and of those to which the Union may be a party.

ART. 99. The supreme court shall also have power to settle questions of jurisdiction between Federal tribunals, between these tribunals and those of the States, or between those of one State and those of another.

ART. 100. In all the other cases mentioned in article 97, the supreme court shall be either a court of appeals, or a court of last resort, as may be defined by the law regulating the jurisdiction of the circuit and district courts.

ART. 101. The tribunals of the Federation shall decide all questions arising out of:

I. Laws or acts of whatever authority violating individual guaranties.

II. Laws or acts of the Federal authority encroaching upon or restricting the sovereignty of the States.

III. Laws or acts of the State authorities invading the sphere of the Federal authority.

ART. 102. All the cases referred to in the preceding article shall be conducted, on petition of the aggrieved party, according to rules of proceedings which a special law shall establish. The decision shall always be rendered in such a language as exclusively to affect the individuals concerned in the case, limiting itself to defend and protect them in the special case to which the proceedings refer, without making any general declaration respecting the law or the act which gave rise to the case.

TITLE IV.

Responsibility of the Public Functionaries.

ART. 103. The Senators and Deputies to the Congress of the Union, the Magistrates of the Supreme Court of Justice, and the Secretaries of the Departments, are

*Amendment of 22 May, 1900.

†Amendment of 29 May, 1884.

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responsible for the common crimes which they may commit during their terms of office, and for the crimes, defaults and omissions of which they may be guilty in the exercise of their offices. The Governors of the States are responsible for the infraction of the Constitution and Federal Laws. The President and Vice-President of the Republic, during the term of their office, can only be accused of treason to the country express violation of the Constitution, attack on the freedom of elections (*ataque á la libertad electoral*), and grave crimes of common order.*

The high officials of the Federation do not enjoy any constitutional privilege (*fuero*) on account of the official crimes, defaults or omissions of which they are guilty in the discharge of any public employment, office or commission which they accepted during the time such privilege is enjoyed according to law. The same is true in respect to common crimes which they may commit during the discharge of said employment, office or commission. In order that the cause may be begun when the high official returns to exercise his functions, the procedure prescribed in Art. 104 of the Constitution must be followed.†

ART. 104. If the crime should be a common one, the Chamber of Deputies, acting as a grand jury, shall declare, by absolute majority of votes, whether or not there is sufficient ground to proceed against the accused. In the negative case, there shall be no ground for further proceeding; in the affirmative, the accused shall be, by the said act, deprived of his office, and subjected to the action of the ordinary tribunals.†

ART. 105. Official crimes shall be cognizable: by the Chamber of Deputies as a Jury of Accusation, and by that of the Senators as a Jury of Sentence. The Jury of Accusation shall have for its object, to declare, by an absolute majority of votes, whether the accused is or is not guilty. If the declaration is favorable (*fuere absolatoria*), the official shall continue in the exercise of his office. If it be condemnatory, he shall be immediately removed from said office and shall be placed at the disposition of the Chamber of Senators; which, resolved into a Jury of Sentence, and after hearing the defendant and the accuser, if there be one, shall proceed to apply, by an absolute majority of votes, the penalty which the law designates.†

ART. 106. In cases of impeachment no pardon can be granted to the offender.

ART. 107. The responsibility for official crimes and misdemeanors can only be enforced during the period in which the functionary remains in office, and one year thereafter.

ART. 108. In civil cases no privilege or immunity in favor of any public functionary shall be recognized.

TITLE V.

States of the Federation.

ART. 109. The States shall adopt for their internal régime the popular, representative, republican form of government, and they may provide in their respective Constitutions for the re-election of the governors, in accordance with the provisions of Art 78 in regard to the President of the Republic.‡

ART. 110. The States shall have the power to fix among themselves, by friendly agreements, their respective boundaries; but those agreements shall not be carried into effect without the approval of the Congress of the Union.

ART. 111. The States can not in any case:

I. Enter into alliances, treaties, or coalitions with another State, or with foreign powers. Coalitions between frontier States for offensive or defensive war against savage Indians are excepted.

II. Grant letters of marque or reprisal.

III. Coin money, issue paper money, stamps or create stamped paper.

IV. Tax (*gravar*) the passage of persons or things which pass through their territory.§

V. Prohibit or tax, directly or indirectly, the entry into their territory, nor the leaving it, of any national or foreign merchandise.

VI. Tax the circulation or the consumption of national or foreign goods, with imposts or duties, the exaction of which is effected through local customs houses, or requires the inspection or examination of packages, or requires any documents to accompany the merchandise.

VII. Enact or enforce laws or fiscal dispositions which produce differences of taxation (*impuestos*) or requirements, on account of the origin of national or foreign merchandise, whether such difference is established because of (*respecto de*) the similar production of the locality, or between like productions of different origin (*procedencia*).

VIII. Issue evidences (*titulos*) of public debt payable in foreign money or outside of the national territory; contract, directly or indirectly, loans with foreign Governments; or contract obligations in favor of corporations or individuals of foreign nationality, when it is necessary to issue for such purpose documents payable to the bearer or transferable by endorsements.§§

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*Amendment of 13 November, 1874, and 6 May, 1904.

†Amendment of 13 November, 1874.

‡Amendment of 21 October, 1887.

§This amendment, of May 1, 1906, was the final step in the abolition of the interstate customs-tax called *alcobala*, which was a very serious restriction of internal commerce and a grievous abuse.

§§Amendment of 1 May, 1896.

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ART. 112. Neither can they, without the consent of the Congress of the Union:
I. Establish tonnage duties, or any port duty, or impose taxes or duties upon imports or exports.
II. Have at any time permanent troops or vessels of war.
III. Make war by itself on any foreign power, except in cases of invasion or of such imminent peril as to admit of no delay. In these cases the State shall give notice immediately to the President of the Republic.

ART. 113. Each State is bound to deliver without delay to the authority which may claim them, the fugitives from justice of other States.

ART. 114. The governors of the States are bound to publish and enforce the Federal laws.

ART. 115. In each State of the Federation entire faith and credit shall be given to the public acts, records, and judicial proceedings of all the other States. The Congress may, by means of general laws, prescribe the manner of proving said acts, records, and proceedings, and the effect thereof.

ART. 116. The Federal Government is bound to protect the States against all invasion or external violence. In case of insurrection or internal disturbance it shall give them the same protection, provided that the legislature of the States, or the Executive, if the legislature is not in session, shall request it.

TITLE VI.

General Provisions.

ART. 117. The powers which are not expressly granted by this Constitution to the Federal authorities are understood to be reserved to the States.

ART. 118. No person shall hold at the same time two Federal elective offices; but if elected to two, he may choose the one which he may prefer.

ART. 119. No payment shall be made which is not included in the budget or authorized by a law subsequent to the same.

ART. 120. The President of the Republic, the justices of the supreme court, the members of Congress, and all other public officers of the Federation, who are chosen by popular election, shall receive a compensation for their services, which shall be determined by law and paid by the Federal treasury. This compensation can not be waived, and any law which may increase or decrease it shall not have effect during the period for which a functionary holds the office.

ART. 121. Every public officer, without any exception, before entering on the discharge of his duties, shall take an oath to maintain this Constitution and the laws emanating from it.

ART. 122. In time of peace no military authority shall exercise other functions than those having close connection with military discipline. No fixed and permanent military offices shall be established except in castles, fortresses, and arsenals depending immediately upon the government of the Union, or in camps, barracks, or depots established outside of towns for stationing troops.

ART. 123. The Federal authorities shall have exclusive power to exercise, in matters of religious worship and external ecclesiastic discipline, the intervention which the laws may authorize.

ART. 124. It is the exclusive right (*facultad privativa*) of the Federation, to tax the merchandise which is imported or exported, or which passes in transit through the national territory, as well as to regulate at all times and even to prohibit, for reasons of safety or police, the circulation in the interior of the Republic of every class of effects, whatever may be the place from which they come (*su procedencia*); provided, that the Federation itself cannot establish or enact (*dictar*) in the District and Federal Territories, the taxes and laws mentioned in fractions VI and VII of Art. 111.*

ART. 125. The forts, barracks, warehouses and other real properties destined by the Government of the Union to the public service and common use, shall be subject to the jurisdiction of the Federal Powers in the terms established by the law which the Congress of the Union will issue; but in order that those hereafter acquired within the territory of any State may be likewise under Federal jurisdiction, the consent of the Legislature of such State shall be necessary.†

ART. 126. This Constitution, the laws of the Congress of the Union emanating therefrom, and all the treaties made or to be made by the President of the Republic, with the approval of Congress shall be the supreme law of the whole Union. The judges of each State shall be guided by said Constitution, laws, and treaties, any provision to the contrary in the constitutions or laws of the States notwithstanding.

TITLE VII.

Amendments to the Constitution.

ART. 127. The present Constitution may be amended. No amendment shall become part of the Constitution, if not agreed upon by the Congress of the Union, by a vote of two-thirds of the members present, and approved by a majority of the legislatures of the States. The Congress of the Union shall count the votes of the legislatures and make the declaration that the amendments have been adopted.

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*Amendment of 1 May, 1896.
†Amendment of 31 October, 1901.

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TITLE VIII.

Inviolability of the Constitution.

ART. 128. This Constitution shall not lose its force and vigor even if its observance is interrupted by a rebellion. In case that by any public disturbance a government contrary to the principles which it sanctions is established, its efficiency shall be restored as soon as the people regain their liberty, and those who shall have figured in the government emanating from the rebellion, or have co-operated with it, shall be tried in accordance with its provisions, and the provisions of the laws emanating from it.

TRANSIENT PROVISION.

The present Constitution shall be published at once and sworn to with the greatest solemnity throughout the whole Republic; but its provisions, except those relating to the election of the supreme powers, Federal and State, shall not go into effect until the sixteenth of September next, when the First Congress, under the Constitution, shall meet. On and after that date the President of the Republic and the justices of the supreme court, who shall continue in the exercise of their functions until their successors are constitutionally elected and enter into the discharge of their duties, shall act in strict accordance with the provisions of this Constitution.

The end of the original Constitution was as follows:

Given at the Hall of sessions of Congress in the City of Mexico on the fifth of February, eighteen hundred and fifty-seven, the thirty-seventh of the Independence.

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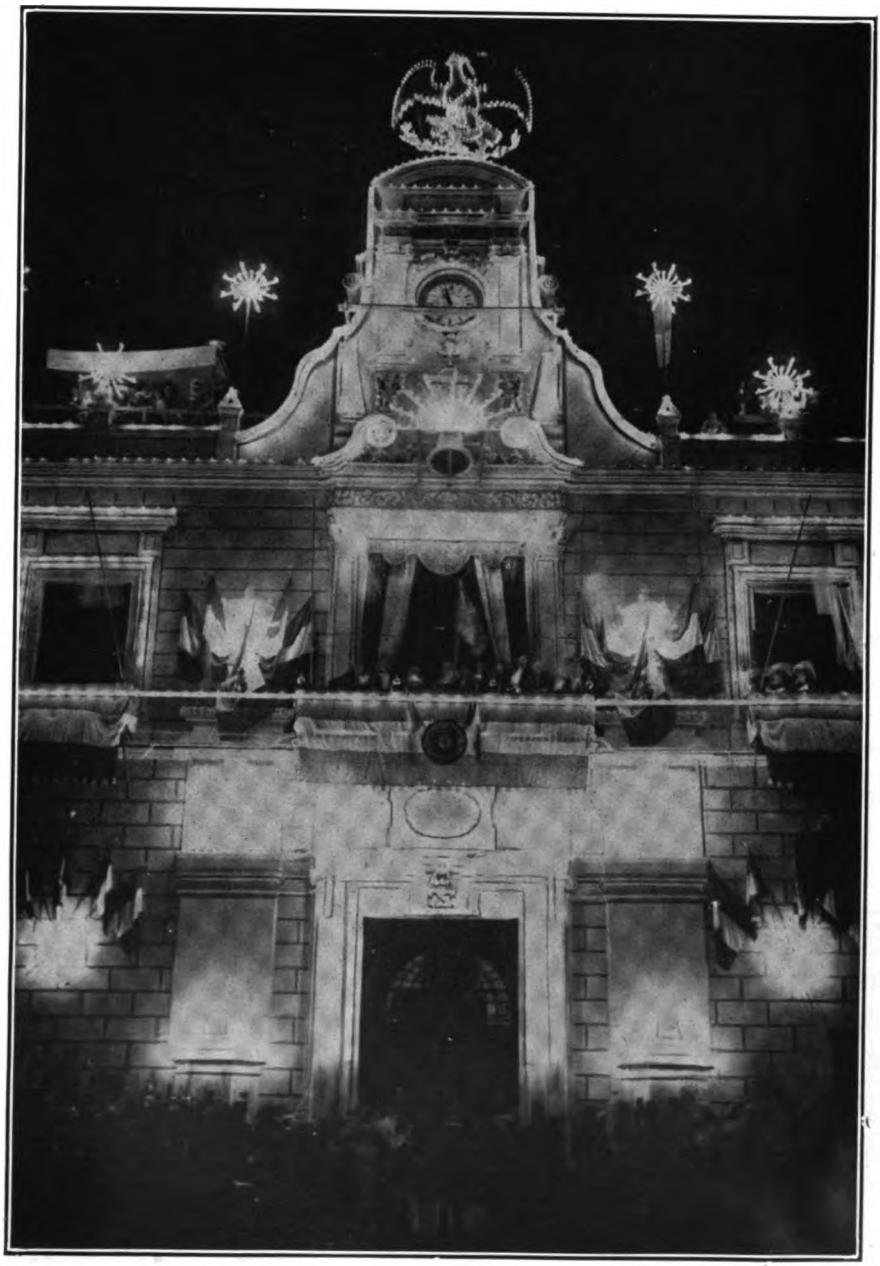

THE HISTORIC MOMENT IN THE HISTORY OF THE REPUBLIC OF MEXICO.

As the hands of the clock approached eleven on the evening of September 15, 1910, President Diaz waved the flag of his country and pulled the cord that caused the liberty bell to sound, as did Hidalgo in Dolores 100 years ago. As the cry of "Viva Independencia" went up, it was answered by tens of thousands of voices around the National Palace, and the new century had begun.

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APPENDIX VII.

LAND LAW (ABRIDGED).

As originally published March 26, 1894.

The Regulations governing its application bear date of June 5, 1894.

(N. B. According to a Decree of Congress, December 18, 1909, the sale of public lands has been temporarily suspended, while a Commission appointed at the same time for that purpose shall make a report covering these public lands; but lands may be leased, at a price which shall represent no less than 5 per cent annually of the value of said lands.)

This is in accordance with the message of the President, read April 1, 1910, in which the paragraph touching on that point is as follows:

Owing to the vagueness and inaccuracy of the data possessed by the Government as to the lands that belong to the Nation, and the difficulties thus occurring in transactions involving those lands, the Executive found itself obliged, as from July 27 (1909) to suspend sale of national land and to send to Congress a law suspending also the denouncement of vacant lands and authorizing the creation of an Agrarian Commission, which, without any other object but the ascertainment of the truth, should proceed to re-survey, measure and collect all other data as to such national property. Congress acted favorably on this proposal, and the decree embodying the measure was promulgated on December 29, 1909.

Under this law Government lands are divided into four classes, as follows:

1. *Terrenos baldíos* (public lands) are all lands in the Republic not devoted to public use by the proper authorities, nor by them conveyed, gratuitously or otherwise, to private individuals or corporations, according to law.

2. *Demasías* (excess holdings) are the lands in possession of private individuals in excess of the area determined by the boundaries established by the original grant, when such holdings lie within said boundaries, being a part of the whole grant.

3. *Excedencias* (outside possessions) are lands possessed by private individuals for twenty or more years, lying beyond the boundaries established by the original grant, but adjoining the land under such grant.

4. *Terrenos nacionales* (national lands) are the unallotted public or vacant lands surveyed by official commissions or by duly authorized corporations, or public lands denounced by private individuals who have subsequently abandoned their claims, or when such claims have not been granted, provided the land has been actually surveyed.

All residents in the Republic of legal age and contractual capacity have the right to denounce or pre-empt public land in any part thereof to an unlimited extent, except natives or naturalized citizens of bordering nations, who can not through any title acquire land in any State or Territory bordering on their country. The privilege hereby granted in nowise repeals the limitations of laws now or hereafter to be enacted relating to the acquisition of real estate by aliens.

The Executive shall establish, by decree to be published in January of each year, the schedule of prices of public lands in each State, the Federal District, and the Territories. This schedule shall remain in force during the fiscal year next succeeding its publication.

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The following lands can not be alienated through any title whatsoever:

1. The seashore.
2. The shore lines extending 20 meters back of high-water mark along the coasts of the mainland and islands.
3. A strip 10 meters wide along each bank of navigable rivers and 5 meters wide along the banks of smaller streams capable of floating any marketable substance.
4. Lands having monumental ruins, together with the ground that may be declared necessary for their care and preservation.

Only the Department of Promotion (*Fomento*) is authorized to enter into contracts for the exploitation of public lands or to lease said lands while no claims or denouncements are pending, and to issue proper rules and regulations for the cutting of timber or the development of such land products, establishing penalties for the violation of said rules and regulations.

Lessees or contractors for public lands may be granted the right to acquire said lands at a certain rate, in case third parties should file claims for grants covering the lands in question. This right is to be enforced within thirty days after the denouncement or claim is filed, the lessees or contractors being under obligation, should they acquire the land, to reimburse the claimant for all surveying and other expenses connected with the filing of the denouncement.

Licenses granted for the exploitation of public lands expire upon the final grant of the land to a denouncer or claimant.

The denouncing of public lands must be made before the agent of the Department of Promotion (*Fomento*) within whose jurisdiction the land is situated.

Within fifteen days after the filing of the necessary petition, the agent must investigate whether the land has been surveyed or is reserved for forests, colonies, or settlement of Indians, or otherwise.

Every denouncement must be published in the office of the agent, the official paper of the State, District, or Territory where the land is situated, at the expense of the denouncer, at whose expense also the survey of the land is to be made by an expert engineer to be named by him with the approval of the agent.

The survey and the plat of the land having been made and no protest having been filed, the agent will make copies of the record and plat and transmit the same to the Department of Promotion (*Fomento*) through the governor of the State in question, for inspection.

Should the Department find the record, plat, etc., unobjectionable, it will adjudicate the land in favor of the denouncer and notify him to pay the price thereof.

This price is that fixed by the schedule in force at the time the denouncement is made, and must be paid within two months after notification. If this term should expire without proof of the payment having been received at the Department, the denouncer loses the rights he may have acquired; otherwise the patent will be delivered to him.

Should any protest be interposed, the matter will be carried to the court of the district within whose jurisdiction the land is situated, to try the issues. In such suits the district attorney will represent the Government. Suits of this character act as a stay of all administrative action until final judgment is delivered.

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APPENDIX VIII.

COLONIZATION LAW.

The (new) Immigration and Colonization Law came into effect on March 1, 1909. The following presents the most important features of the text:

CHAPTER 1.

General Provisions.

Article 1. Foreigners coming to the Republic may enter only

(1) Through ports open to commerce of the high seas;
(2) Through frontier points open to foreign commerce or especially designated by the Executive.

Article 2. Every foreigner who desires to enter the national territory will be subject to inspection or examination in order that it may be determined whether he is admissible according to this law.

Mexicans also will be inspected, in order that the necessary precautions may be taken in case they are suffering from transmissible diseases.

Article 3. Foreigners belonging to any of the following classes will not be entitled to enter:

(1) Persons suffering from bubonic plague, cholera, yellow fever * * * or any acute malady which may be considered transmissible;
(2) Persons suffering from tuberculosis, leprosy * * * or any chronic malady which is considered transmissible.
(3) Epileptics and persons of unsound mind;
(4) Persons who, owing either to old age, debility, deformity * * * or in any way crippled or afflicted with physical or mental defect, or * * * liable to become a public burden;
(5) Children under sixteen years of age, not traveling in the care of some other passenger nor consigned to any person residing in the country who is to take charge of them.
(6) Fugitives from justice and persons who have been sentenced for any felony which, according to Mexican law, would be chastised with more than two years' imprisonment, with the exception * * * of offenses of a political or purely military character;
(7) Persons belonging to anarchistic societies or who propagate, hold or profess the doctrine of the violent destruction of governments or the assassination of public functionaries;
(8) Mendicants or persons who in any way live on public charity;
(9) Prostitutes and persons who attempt to bring them into the country. * * *

Article 4. Foreigners included in Sections 2, 3, and 4 of the foregoing Article may enter and sojourn in the country by special concession of the Executive, provided they give bond * * * for treatment at their own expense * * * and that they will not become a public burden.

Article 5. (A foreigner living in the country intending to become a naturalized Mexican may bring in members of his family even though afflicted as in the above sections 2 and 3 of Article 3, under proper permission.)

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Article 6. Foreigners of more than three years' residence in the Republic, and absence therefrom of not more than one year, will be considered on the same footing as Mexicans * * *.

Article 7. (A foreigner, in the country contrary to this law, may be sent back whence he came if, at the time of his being held, he has not resided more than three years in the Republic. The deportation will take place * * * with the same company by which he arrived, and if that be not possible, then by a second company at the expense of the first.)

Article 8. (The deportation may be suspended if, in the judgment of the Executive, the foreigner's evidence be necessary in a penal suit.)

Article 9. Navigation and immigration companies are pecuniarily liable for contraventions of this law committed by their employees or agents * * *.

Article 10. * * * This law is not applicable to foreign diplomatic agents, their families and suites, nor to persons exempted from territorial jurisdiction, according to * * * international law.

Article 11. (The Department of the Interior has charge of the enforcement of this law.)

CHAPTER II.

Concerning the Entrance of Passengers Through Seaports.

Article 12. On arrival of a steamship having on board passengers who purpose landing in the Republic, the following rules will be observed:

(1) The commander of the ship will present to the Inspector of Immigration duplicate lists of passengers * * * stating * * * name, age * * * and point of final destination in the Republic. * * *

(2) The lists will state * * * which are the sick passengers and what maladies they are suffering from, with the attestation of the ship's physician * * *.

(3) Each passenger will receive a card * * * so that he may be readily identified.

(4) The commander will also note * * * information * * * so that it may be determined whether any of the passengers are to be denied admittance into the Republic.

(5) Every passenger will have to submit to a medical examination * * *.

The commander of a vessel who contravenes any of the provisions of this article or who omits stating * * * the true condition of any passengers, will be penalized * * * with a fine * * *. The same fine will be imposed on the ship's doctor if he shall have given * * * his signature to false declarations.

Article 13. Disembarcation will take place * * * as designated by the Inspector of Immigration * * *.

Article 14. (Contains technical details about the sanitary station.)

Article 15. Passengers who, on their arrival, are suffering from any of the transmissible diseases enumerated in Section 1 of Article 3 will be isolated in the *lazaretto* of the port until they are cured. Expenses * * * will be charged to the passenger receiving them, and if he be destitute of funds, such expenses must be paid by the company which brought him. If the insolvent passenger be a Mexican, his expenses will be charged to the public administration.

Article 16. Foreigners who, on their arrival, are suffering from any of the transmissible diseases * * * will not be permitted to land (without) * * * special permission from the Executive.

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A Laboratory in the National Medical Institute, Mexico City.

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Article 17. Mexicans suffering from any of the transmissible diseases * * * will be sent to the hospital for isolation and cure, unless they give a sufficient bond to guarantee that they will undertake to be cured * * * at their own expense * * *.

Article 18. When a foreigner suffering from * * * disease or disability * * * succeeds in landing, he will be at once re-embarked in the same vessel by which he arrived or, if said vessel has already left, then in the next vessel of the same company sailing for the country from which such foreigner came, or in any other vessel having the same destination * * *.

Passengers * * * to be re-embarked will remain in custody * * * at the expense of the company which brought them * * *.

Article 19. If the commander of a vessel should refuse to comply with an order for re-embarkation * * * a fine shall be imposed upon him and the vessel will not be cleared * * *.

CHAPTER III.

Concerning Immigrant Laborers and Immigration Companies.

Article 20. * * * Foreigners will be regarded as immigrant laborers who come to the Republic to engage temporarily or permanently in physical labor. Persons constituting the family of an immigrant laborer will also be considered as such.

The entry of immigrants will be ruled by the provisions of this and the preceding chapter.

Article 21. The entrance of immigrant laborers in groups of more than ten in one vessel will be allowed to take place only through ports specially designated by the Executive.

Article 22. Navigation companies whose vessels are devoted exclusively to the transportation of immigrant laborers, or which habitually have more than ten of them on board on each trip, will be obliged to comply with the following requirements:

(1) To equip their vessels with the necessary apparatus * * * to insure the destruction of pathogenic germs.

(2) To have a physician on board of each vessel.

(3) To maintain at the ports through which they bring in immigrants (in case the Government has no sanitary establishment * * * there) quarters for the * * * observation of such immigrants * * *.

(4) To * * * care for * * * at their own expense and in accordance with * * * directions, all immigrants whom they have brought in as long as they are quartered in * * * places of observation.

(5) To take back in their vessels and at their own expense all immigrants who are not admitted under this law * * * provided they have been brought in on board their vessels.

(6) To have in the City of Mexico a representative fully empowered to treat as to all matters that may arise * * *, and another such representative at each of the ports through which they may bring in immigrants.

(7) To give bond * * * as a guarantee that they will comply with the obligations imposed * * * and to renew such bond as often as necessary.

Article 23. Companies which fail to comply with the obligations * * * will be called upon to do so, and if they still fail * * *

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within the * * * time allotted to them, no vessels of theirs with immigrants on board will be received in any Mexican port.

If a company fails to comply with the obligations (Sections 4 and 5 of the preceding Article), the necessary sum will be raised out of the bond (under Section 7).

Article 24. When a vessel has on board more immigrants than can be accommodated in the sanitary station * * *, only such number will be allowed to land as can be accommodated * * *; the remainder will undergo examination and, if necessary, observation and cure, on board ship.

(If no sanitary station is available) immigrants will remain on board for * * * examination and * * * medical care.

Article 25. When a vessel has on board a considerable number of immigrant laborers under contract to enter the service of mining, industrial or agricultural concerns, the Executive may permit them to land at ports other than those ordinarily designated for the entrance of immigrants, but in all cases proper precautions will be taken * * * to ensure the observance of this law.

Article 26. When ordinary passengers and immigrants arrive in * * * the same vessel, the lists (Article 12) will be separate.

Article 27. * * * special lists will be drawn up of the ailing passengers.

Article 28. If none of the immigrants be suffering from infectious maladies, and there have been none such during the last ten days of the passage, and the vessel has not touched any suspected or infected port, the immigrants will be free to enter and continue their journey * * * as soon as the medical examination shall have been completed.

Article 29. Immigrant laborers may be subjected to a period of observation lasting as long as ten days, when there are individuals among them suffering or suspected to be suffering from a transmissible disease, or when there have been such during the passage, or in general whenever the Executive so decides.

Article 30. If, during the period of observation, it be discovered that some among the immigrants labor under any disabilities * * * they will be re-embarked.

Article 31. Immigrants who have not been vaccinated will be vaccinated at the sanitary station.

Article 32. The sanitary station * * * will be under the direction * * * of the sanitary delegate of the port.

Article 33. The expenses * * * of the sanitary stations of immigrants * * * will be a charge upon the companies themselves.

CHAPTER IV.

Concerning the Entrance of Passengers by Land Routes.

Article 34. The entrance of passengers by land routes will be subject to the following rules:

(1) The examination will take place on board the railway trains.

(2) The Inspector of Immigration will secure from each passenger, by means of blank forms, particulars specified in Section 1 of Article 12.

(3) In order that trains may not be held long, agents will board the cars, examine passengers and obtain from them the required data.

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(4) When passengers arrive otherwise than by rail, they may be held at the points of entry as long as may be necessary for their examination * * *.

(5) Railway trains transporting only immigrant laborers or having more than thirty of them on board will be held on their reaching national territory in order that the immigrants may be forthwith examined * * *.

(6) Foreigners suffering from any transmissible disease will be * * * excluded, or will be permitted to enter only on furnishing bond (Article 4).

(7) Foreigners suspected to be suffering from a transmissible disease will be permitted to remain at the place of entry, * * * in observation, provided they guarantee payment for their board and lodging.

Passengers making false statements will be penalized * * *.

Article 35. The Inspector of Immigration may fix time and place for the entrance of passengers who do not come by rail. He may also fix a time for the entrance of extraordinary trains with passengers.

Entrance at any time or place other than those authorized will be punished by the imposition * * * on employees in charge of the train or conveyance, and on those who have ordered the entrance * * *, of penalties * * * of a fine * * * or major arrest, or both.

Passengers who have entered illegally * * * will be penalized * * *.

CHAPTER V.

Concerning Administrative Jurisdiction in Matters of Immigration.

Article 36. All matters connected with immigration will be under * * * the Interior Department, which will administer them through the following functionaries and institutions:

(1) Inspectors of Immigration * * * stationed at sea-ports or frontier through which entrance of passengers is allowed.

(2) Auxiliary agents who * * * will assist the local Inspector in his work * * *.

(3) Immigration Boards, which will be established at every point where there are Inspectors, and which will consist of three persons specially appointed, or, if no appointments are made, of the sanitary delegate. the collector of customs or chief of the custom-house, and some other Federal employee * * *.

Article 37. At points where there is no Inspector of Immigration, the sanitary delegate will discharge the functions of that official.

Article 38. The decisions of the inspectors * * * will be revised by the Immigration Board. if a request to that effect be made * * *. All decisions will be recorded in writing and signed * * *.

Article 39. It is the prerogative of the Inspectors of Immigration to impose the fines * * *. Their decisions will, however, be revised by the Interior Department, * * *.

CHAPTER VI.

Concerning Penal Jurisdiction in the Application of This Law.

Article 40. The Federal Tribunals are competent to try all cases growing out of the violation of this law.

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Article 41. At points where there is no district judge in residence, the ordinary local judges, acting as auxiliaries of the Federal judicature, will * * * with consent of the competent Federal court, conduct the case as far as the sentence stage. * * *

Transient Article.

Article 49 of the Sanitary Code, and in general all enactments at variance with the precepts of this law, are repealed, and this law will go into effect on the first day of March, 1909.

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National Geological Institute, Mexico City.

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APPENDIX IX.

MINING CODE OF MEXICO.*

On the morning of November 25, 1909, President Diaz set his signature to the new mining code of Mexico as passed by the two legislative cámaras. The new mining code, to become effective after the 1st day of January, 1910, supercedes the code of 1892. It contains, however, comparatively little that is new. The cardinal features of the old Mexican mining law are in no wise changed. The main purpose of the new codification was to fuse into one homogeneous and co-ordinated whole the provisions of the old code and the related heterogeneous mass of executive decrees and departmental rulings and circulars which had accumulated during some twenty years, and which made the search and application of the Mexico mining laws a matter of no little difficulty. The general consensus of opinion in the mining and legal professions here is that the new law is a masterpiece of conservative effort and that it will stand as a monument to the wisdom and energy of the Secretary of the Department of Fomento, Señor Licenciado Olegario Molina, who compiled it.

The fundamental principles to-day underlying the mining laws of Mexico are borrowed from the Spanish legislation, modified in certain respects to meet the different political and economical conditions existing here. Under the Mexican law all mineral deposits are divided sharply into two classes. Those falling in the first class belong to the owner of the soil, whereas those falling in the second class lie in the grant of the nation and may be acquired only by denouncement and the issue of a federal patent. The substances belonging to the owner of the soil embrace deposits of mineral combustibles, such as coal and oil, of bituminous substances, and of surface salts; also quarries of marble, slate, building stone, etc. These do not come under the mining laws for any purpose whatsoever, except that coal mines are subject to federal police inspection. The substances which lie in the grant of the federal power are all deposits of inorganic substances found in veins or masses the formation of which is separate and distinct from that of the country rock. Such substances include the minerals, such as gold, silver, lead, copper, etc.; the precious stones; sulphur, arsenic, and tellurium, and rock salt. To these deposits must be added placers of gold and of platinum. All these fall under the provisions of the mining code, and, until granted, are owned by the Federal Government, representing the nation, wherever they may be found, whether in private ground or in the public domain.

As a consequence of this, the mineral ownership is different from the ownership of the soil; and the freehold in the mineral deposits is for all legal purposes distinct and permanently separated from the freehold in the soil. Even when the two estates are united in the same person, no legal fusion takes place; each estate is held under and by virtue of a distinct title.

Mines are acquired from the Government under an administrative proceeding had before a local representative of the Department of Fomento, called a mining agent. The proceeding is termed a denouncement. Any person, whether foreign or native, except as indicated below, may denounce a mining property and secure a patent to the same. The title is

*Abstracted by Frederick F. Barker, Mexico City.

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issued to the first applicant. The Mexican law gives no preference to the discoverer of the mine, nor to the first occupant, nor to the owner of the soil. Priority of application, with issue of title and due registration thereof, alone gives priority of right.

The unit of grant is what is called a *pertenencia,* being a solid of unlimited depth, the upper or projected extremity of which is a square measuring 100 meters (328 feet) on each side. The law sets no limit to the size of the mineral grant, and the applicant's enthusiasm will be restrained only by the fact that on every *pertenencia* he must pay an initial tax of 5 *pesos* (a *peso* being the equivalent of 50 cents in United States currency), and an annual tax thereafter of 6 *pesos* a *pertenencia* on the first 25 *pertenencias* and 3 *pesos* a *pertenencia* on the excess, provided they are contiguous.

Although the owner of a mining grant does not own or control the surface ground, the law, regarding the mining industry as a public utility, compels the surface owner to permit whatever easements or expropriation of ground may be found necessary for the conduct of the mining operations. The law also grants the miner the use and enjoyment of the waters discovered in the mine.

It will be of especial interest to the American reader that the Mexican law knows nothing of the "apex rule." A miner may not pass the vertical planes of his grant; his mining operations must be confined strictly within his boundary lines drawn downward perpendicularly.

Once the miner has denounced, secured title to, and recorded his mine, all of which takes only a few months, he becomes the real owner thereof and may commence his mining operations. His property is subject to forfeiture only for nonpayment of the annual mining tax referred to above. No yearly assessment or presentation work is required of him. Subject to the police regulations governing mines, a miner may work his mineral deposits as he sees fit or may defer work indefinitely. Punctual payment of the mining tax is his sole condition of tenure.

These, in a few words, have been the basic principles of the Mexican mining laws for many years. The new code does not modify them in any way, but removes some of the old restrictions which hampered their application. In the first place, the new code completely federalizes the law applicable to mining property. The mining laws have always been federal in origin and sanction, but where no provision of the mining law was found to cover a given point, the local law was applied. Under the new code, in such cases the provisions of the civil code of the Federal District become applicable. Furthermore, the federal courts are given a wider jurisdiction than formerly over mining cases; and certain criminal offenses committed against mining enterprises, such as the robbery of minerals, are made of federal sanction.

To the commercial world, perhaps the most important innovation contained in the new mining code is that to be found in the provisions relative to mine options. Under the new law a mine option covering a period of two years may be recorded, and the holder of the option thereby acquires a property right in the mine. In other words, his right to exercise the option under the terms of the agreement will not be affected by any attempt on the part of the owner of the mine to sell to some other party. Up to the present time it has been well-nigh impossible to secure to the holder of an option full legal protection.

The new code has diminished somewhat the prospectors' rights and privileges as accorded under the old law. It has been found that the too liberal provisions of the former code had led to abuse. Under the law as it now stands, any person may secure a permit to explore either in public or in private lands, but the area of exploration is limited to the area of a circle the diameter of which does not exceed 1,000 meters

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(3,280 feet). The term of exploration permitted is limited to sixty days, and is not renewable except after the lapse of six months. The holder of an exploration permit has a preferential right to denounce mines found in the exploration zone, but only during the life of the permit of course. No exploration permits are procurable in ground where mining operations have already been conducted, nor within 200 meters (656 feet) of a mining property, nor in inhabited districts.

A provision of the new mining code which will appeal to all miners is to the effect that no title or patent will be issued until the proper boundary monuments have been set up. Present holders of mining properties lacking these monuments are allowed one year within which to construct them.

Uder the old mining law and related jurisprudence certain forms of mining partnership had come to be regarded as unlawful. The new code sweeps away all such restrictions and prohibitions and makes the federal commercial code applicable in such matters. The commercial code is very liberal in respect of partnerships and corporate associations.

It may be added that the system of registration of mining titles has been perfected; that the administrative powers of the Department of Fomento have been somewhat increased, especially in the matter of the creation of provisional easements and the provisional expropriation of ground for mining uses, as also in the inspection of mines with a view to enforcing the mining law and its regulations and to the securing of statistical data; and, finally, that the new law permits the expropriation of ground for the construction of metallurgical works and railroads to be operated in connection with the mining property.

A word in conclusion in regard to the status of foreign miners in the Republic of Mexico. Except in a zone of 80 kilometers (50 miles) along the border, the mining laws of Mexico do not discriminate against the foreigner. A foreign company, partnership, or individual may conduct explorations, denounce mines, and obtain mineral grants, under the same terms and conditions as a Mexican citizen. To enjoy these privileges, not even residence in the Republic is necessary, since both the denouncement may be made and the title secured through a representative. Within the aforesaid zone an individual may indeed denounce mines, but in order to obtain a title under which to work them or to acquire permanent property rights in mines so located, or mortgages thereon, he must first secure a permit from the President of the Republic. In the case of foreign companies, these may neither denounce nor permanently acquire by any means whatever mining lands or mortgages thereon within the zone indicated. Where such property is acquired under a judgment for debt, or upon succession at death, a year is allowed for the disposal of the mines. Under the Mexican laws, however, a Mexican corporation may consist partly or entirely of nonresident foreigners. There is nothing, therefore, either in the spirit or in the letter of the law, to prevent a foreigner from denouncing a mine in the border zone and subsequently forming a Mexican corporation, in which he may hold practically all the stock, to take over and operate his mining interests so acquired.

The rules and regulations of the new mining law of Mexico are printed in full in the *"Diario Oficial"* of December 18, 1909, and are classified under the following heads: (1) Concerning mining claims; (2) concerning denouncements of mining claims; (3) concerning oppositions; and (4) general provisions concerning applications for mining claims, easements, transportation and exploration, and expropriation and permits to foreigners. Another law of the same date treats of the fees to be paid mining agents.

When it is desired to prospect on government lands, a fee of 4 *pesos*

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must accompany the application to the mining agent. If the prospecting is to be done on private lands, and the owner of same gives his consent thereto, a fee of 4 *pesos* must be paid at the time of filing the application, but should the consent of the owner of the land not be obtained, a charge of 8 *pesos* will be made.

The total fees to be paid to the mining agent for all the proceedings in a denouncement, including a copy of the docket, until the delivery of the respective title, provided no reduction of claims or opposition arises during the proceedings, are as follows: Two *pesos* at the time of filing the denouncement; 10 *pesos* on the acceptance of the denouncement by the mining agent, and 18 *pesos* on receiving the copy of the extract of the application for publication.

For the proceedings caused by an application for the reduction of a denouncement of mining claims that is in course of procedure, 8 *pesos* at the time of presenting the application.

For the complete proceedings of an application for the rectification of a mining property in any of the cases prescribed in articles 53, 54, and 55 of the mining law, provided no opposition proceeding arise up to the time the new title or copy of the proceedings that are to be attached to the title are delivered, the following fees must be paid to the mining agent: 10 *pesos* at the time of filing the application and 18 *pesos* on receiving a copy of the extract of the application for publication.

For taking the steps necessary to expedite an application for the division of a mining property up to the time of the delivery of the titles for the new properties, a payment of 5 *pesos* must be made to the mining agent on filing the petition.

For all proceedings relating to the reduction of the claims (*pertenencias*) of a mining property, 10 *pesos* on filing the application.

For all proceedings concerning applications for the expropriation of lands or easements, if the mining agent intervenes in the same, a payment must be made in each case on filing the respective petition.

In case of opposition to a denouncement, the denouncer shall pay for the proceedings at the mining agency, 10 *pesos*, but retains the right to reclaim the same from the defendant or opposer in the corresponding suit.

For a copy of writs of execution or judgments, issued in suits opposing denouncements of mining properties, which copy should be included in the docket the mining agent sends to the Department of Fomento, a charge of 2 *pesos* per sheet, or fraction thereof, will be made.

For checking and authorization of plans, 2 *pesos*.

For a certified copy of the report of experts, or for any kind of document issued by the mining agents at the request of the parties in interest, a charge of 2 *pesos* per sheet, or fraction thereof, will be made.

For the registration of any document, 1 *peso*.

For locking up dockets, or any other documents contained in the files, 1 *peso*.

If the party in interest does not furnish sufficient data and it is necessary to register documents corresponding to more than one year a charge for registration of 1 *peso* per year will be made.

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APPENDIX X.

BANKS IN MEXICO.

Banks of Emission.

NATIONAL BANK OF MEXICO...Main Office, City of Mexico.
Branches at Acapulco, Grro.; Aguascalientes, Ags.; Autlán, Jal.; Bravos, Grro.; Campeche, Cam.; Celaya, Gto.; Ciudad Guzmán, Jal.; Ciudad Juárez, Chih.; Ciudad Porfirio Díaz, Coah.; Ciudad Victoria, Tams.; Colima, Col.; Cuernavaca, Mor.; Chihuahua, Chih.; Durango, Dgo.; Guadalajara, Jal.; Guanajuato, Gto.; Guaymas, Son.; Hermosillo, Son.; Irapuato, Gto.; Jalapa, Ver.; Lagos, Jal.; La Piedad, Mich.; León, Gto.; Matehuala, S. L. P.; Mazatlán, Sin.; Mérida, Yuc.; Monclova, Coah.; Monterey, N. L.; Morelia, Mich.; Nogales, Son.; Nuevo Laredo, Tams.; Oaxaca, Oax.; Orizaba, Ver.; Pachuca, Hgo.; Parral, Chih.; Puebla, Pue.; Puruándiro, Mich.; Querétaro, Qro.; Rioverde, S. L. P.; Saltillo, Coah.; San Andrés Tuxtla, Ver.; San Juan Bautista, Tab.; San Luis Potosi, S. L. P.; Tampico, Tams.; Tantoyuca, Ver.; Tapachula, Chis.; Tepic, Tep.; Teziutlán, Pue.; Tlaltenango, Zac.; Toluca, Méx.; Torreón, Coah.; Tulancingo, Hgo.; Tuxtla Gutiérrez, Chis.; Uruápam, Mich.; Veracruz, Ver.; Zacatecas, Zac.; Zamora, Mich.

BANK OF LONDON AND MEXICO..Head Office, City of Mexico.
Branches at Veracruz, Ver.; Torreon, Coah.; Monterrey, N. L.; Querétaro, Qro.; Durango, Dgo.; Mazatlan, Sin.; Guadalajara, Jal.; Puebla, Pue.; San Luis Potosi, S. L. P.; Morelia, Mich.; Guanajuato, Gto.; Aguascalientes, Ags.

BANK OF AGUASCALIENTES....Head Office, City of Aguascalientes.
Branch at Guadalajara, Jalisco.

BANK OF CAMPECHE.....Head Office, Port of Campeche, Campeche.
(By an agreement, October 30, 1908, this Bank has been changed into a *banco refaccionario.*)

BANK OF COAHUILA.....Head Office, Saltillo, Coahuila.

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MINING BANK OF CHIHUAHUA..Head Office, City of Chihuahua.
Branches at Gomez Palacio, Dgo.; Parral, Chih.; Hermosillo, Son.

BANK OF DURANGO.....Head Office, City of Durango.
Branch at Ciudad Gomez Palacio.

BANK OF GUANAJUATO.....Head Office, City of Guanajuato.
Branches at Irapuato, Gto.; Guadalajara, Jal.; Zamora, Mich.

BANK OF GUERRERO.....Head Office, Iguala, State of Guerrero.

BANK OF HIDALGO.....Head Office, Pachuca, State of Hidalgo.

BANK OF JALISCO.....Head Office, Guadalajara, State of Jalisco.
Branches at Tepic, Tep.; Zamora, Mich.; Ciudad Guzman, Jal.

BANK OF THE STATE OF MEXICO..Head Office, Toluca, State of Mexico.
Branches at Morelia, Mich.; El Oro, Mex.

MERCANTILE BANK OF MONTERREY..Head Office, Monterrey, State of Nuevo Leon.

BANK OF MORELOS.....Head Office, Cuernavaca, State of Morelos.
Branch at Acapulco, Gro.

BANK OF NUEVA LEON.....Head Office, Monterrey, State of Nuevo Leon.

OCCIDENTAL BANK OF MEXICO..Head Office, Mazatlan, State of Sinaloa.
Branches at Guaymas, Son.; Colima, Col.

ORIENTAL BANK OF MEXICO..Head Office, Puebla, State of Puebla.
Branches at Teziutlan, Pue.; Oaxaca, Oax.; Tuxtla Gutiérrez, Chis.; Tehuacan, Pue.; Tehauntepec, Oax.; Tapachula, Chis.

PENINSULAR BANK OF MEXICO..Head Office, Mérida, State of Yucatan.
Branch at Campeche, Cam.

BANK OF QUERÉTARO.....Head Office, Querétaro, State of Querétaro.
Branch at Irapuato, Gto.

BANK OF SAN LUIS POTOSI... Head Office, San Luis Potosi, State of San Luis Potosi.

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BANK OF SONORA.....Head Office, Hermosillo, State of Sonora. Branches at Guaymas, Son.; Alamos, Son.; Nogales, Son.; Culiacan, Sin.; Chihuahua, Chih.

BANK OF TABASCO.....Head Office, San Juan Bautista, State of Tabasco. Branch at Pichucalco, Chis.

BANK OF TAMAULIPAS.....Head Office, Tampico, State of Tamaulipas.

MERCANTILE BANK OF VERACRUZ..Head Office, Veracruz, State of Veracruz. Branches at Jalapa, Ver.; Orizaba, Ver.; Cordoba, Ver.; San Andres Tuxtla, Ver.

BANK OF ZACATECAS.....Head Office, Zacatecas, State of Zacatecas. Branches at Aguascalientes, Ags.; Lagos, Jal.

Mortgage Banks.

MORTGAGE BANK OF TERRITORIAL CREDIT OF MEXICO. Head Office, Mexico City (Banco Hipotecario de Crédito Territorial Mexicano).

INTERNATIONAL AND MORTGAGE BANK OF MEXICO. Head Office, Mexico City (Banco Internacional é Hipotecario de Mexico).

Banks of Encouragement.

MEXICAN CENTRAL BANK. Head Office, Mexico City.

MEXICAN BANK OF COMMERCE AND INDUSTRY. Head Office, Mexico City.

BANK OF CAMPECHE. Head Office, Campeche, State of Campeche. (This is an encouragement bank—*banco refaccionario*—in operation since March 1, 1909, taking the place of an older Bank of Campeche, of issue.)

COMMERCIAL BANK OF ENCOURAGEMENT OF CHIHUAHUA. Head Office, Chihuahua, State of Chihuahua.

LAGUNA BANK OF ENCOURAGEMENT. Head Office, Torreon, State of Coahuila.

MICHOACAN BANK OF ENCOURAGEMENT. Head Office, Morelia, State of Michoacan.

It should be known, also, that these banks have, besides their official branches, agencies or correspondents in all the larger cities throughout the Republic.

Many of these banks once operated under former charters, but have changed their names or have been allowed to alter their character, within recent years. The above list represents the Federal chartered banks as reported in the *Boletin de Estadistica Fiscal* for the fiscal year ending June 30, 1910.

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In addition to these, however, there are in the City of Mexico several well-established banks, either of Mexican origin, or branches in the Republic of foreign banking organizations.

Banco Germánico de la America del Sur.	(German Bank of South America.)
Bank of Montreal.	
Caja de Préstamos para Obras de Irrigación y Fomento de la Agricultura.	(Loan Bank for Irrigation and Agricultural Works.)
Compañia Bancaria de Fomento y Bienes Raices de Mexico.	(Banking Company of Real Estate and Promotion.)
Campañia Bancaria de Hipotecas y Préstamos.	(Loan and Mortgage Banking Company.)
Compañia Bancaria de Fomento y Bienes Raices de Mexico.	(Mexican Banking Company for Promotion and Real Estate.)
Compañia Bancaria de Bienes Raices de Mexico.	(Real Estate Banking Company.)
Compañia Bancaria de Paris y Mexico.	(Banking Company of Paris.)
Compañia Banquera Mercantil.	(Mercantile Banking Company.)
Descuento Español.	(Spanish Discount Society.)
Federal Banking Company.	
Mexico City Banking Company.	
United States & Mexican Trust Company.	
Monte de Piedad	(National Pawnshop).
International Banking Corporation.	

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APPENDIX XI.

Outline of Tariff Schedules.

The Mexican Government maintains a protective tariff, charging import duties on many articles brought into the country; from these charges a considerable amount, about 44 per cent, of the national revenue is derived; an export duty on a few articles is also payable, but the income from this source is scarcely one-half of one per cent of the national revenue. Certain articles, such as materials of war and counterfeit money, are altogether prohibited from importation; the exportation of Mexican antiquities and historical objects is also prohibited. A few articles are imported free of duty, a still larger list, such as fixed railroad stock, rolling stock, telegraph and building material, may be, under special concession, admitted duty free, and the Executive has the right, in an emergency, to remit duties on specified articles, such as necessary foods, for the time being. The Territory of Quintana Roo enjoys practically an exemption from customs duty charges.

The framework upon which in the tariff, import duties are levied, is as follows:

Animal Substances:

- Live Animals.
- Animal Products and Wastes—Alimentary, Industrial, Medicinal.
- Products of Animal Origin—Alimentary, Industrial, Medicinal.
- Industrial Products and Manufactures—Articles of Fur and Leather, Foot Wear, Miscellaneous Articles.

Vegetable Substances:

- Textile Fibers.
- Fruits and Cereals—Alimentary, Medicinal, Industrial, Live Plants and Seeds.
- Miscellaneous Vegetable Substances.
- Various Vegetable Products—Alimentary, Medicinal, Industrial.
- Wood.
- Manufactures of Vegetable Substances—Manufactures of Wood, Furniture, Articles of Various Substances.

Mineral Substances:

- Gold, Silver and Platinum—Ores and Metals; Manufactured articles.
- Copper and Alloys thereof—Ores and Metals, Manufactured articles.
- Tin, Lead and Zinc—Ores and Metals, Manufactured articles.
- Iron and Steel—Ores, Construction and Mining Materials, Manufactures.
- Other Metals.
- Stones and Earths—Mineral Products (Oils, coke, etc.).
- Manufactured Articles.
- Crystal Glass, Crockery and Porcelain.

Textiles, and Manufactures thereof:

- Cotton—Yarns, Textiles, Manufactured articles.
- Flax, Hemp, etc.—Yarn, Tissues, Manufactured articles.
- Wool—Yarn, Tissues, Manufactured articles.
- Silk—Yarn, Tissues, Manufactured articles.
- Silk composed with other materials—Yarn, Tissues, Manufactured articles, artificial Silk.

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Chemical and Pharmaceutical Products.
Spirituous, Fermented and Natural Beverages.

Paper and Paper Products:
- Wastes and Pulp for the Manufacture of Paper.
- Paper and Cardboard.
- Manufactured Papers.
- Manufactured articles, of Paper.

Machinery and Apparatus.
Vehicles.
Arms and Explosives.
Miscellaneous Articles.

This schedule embraces 713 tariff numbers, under which almost all goods are specified.

Export duties are paid on the export of Broom root (*zacaton*), Chicle, Guayule grass, in a natural state or ground, Ixtle unmanufactured, hides and skins, untanned, and upon building lumber and cabinet woods of national origin, as well as upon foreign woods which pass through the territorial waters of the Republic.

CUSTOMS TARIFF REGULATIONS CONCERNING PASSENGERS' BAGGAGE.

Art. 219. Upon their arrival in the Republic passengers are required to present their baggage to the custom-house official in charge of baggage inspection, and they must open their baggage or furnish keys so that the contents may be inspected.

Baggage shall be cleared in preference to anything else, and immediately after unloading, even outside the usual office hours; and the inspection shall be continued, even at night, until completed, with the understanding that all packages shall be inspected.

Household goods brought by passengers, equipment or wardrobes of public show companies or troupes, samples imported temporarily without payment of duties, and merchandise the duty on which may amount to more than 200 *pesos* shall not enjoy the privilege of immediate clearing; but the customs collectors shall arrange to give them preference over the ordinary importation of merchandise, and, if necessary, they shall be cleared outside of the usual office hours.

Art. 221. When passengers have no dutiable articles in their baggage it shall be turned over to them without more delay than is necessary to make the inspection.

Art. 222. For the clearance of goods which passengers bring with them, the duty on which, calculated according to tariff rates, exceeds 200 *pesos*, but is not more than 500 *pesos*, an application is required, but in this case passengers are not obliged to make a detailed list of the articles in their possession, this being done by the inspector who clears the goods. In collecting the duty the customs officials shall include in it double the amount of the consular fee that would have been charged on the invoice.

In the case of merchandise subject to a duty of more than 500 *pesos* according to the tariff, and not covered by a consular invoice, the interested party is required to present an application for clearance, and shall pay, in addition to the import duties, the corresponding amount of additional charges.

Art. 224. By baggage is understood, for the purpose of exemption from duty, the following:

I. Wearing apparel, provided it is not considered excessive by the collector, in view of the circumstances of the passengers.

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II. Articles which are worn for personal use, as jewels, watch, chain, buttons, cane, etc., one or two arms, with their accessories, and as many as a hundred cartridges, if the weapons are firearms.

III. The indispensable or most essential instruments or tools for the exercise of a profession or trade, if the passengers are teachers, artists, or artisans. This exemption does not apply to pianos, organs, or hand-organs, or the material or accessories for the installation of laboratories, workshops, or collections.

IV. One hundred cigars, 40 small boxes of cigarettes, and half a kilogram of snuff or chewing tobacco, if the passengers are adults.

V. Used books.

Customs Treatment of Samples.

Art. 213. Samples intended to make known the merchandise which they represent may be imported under the privileges granted in the articles relating thereto in this law.

Art. 214. There shall be admitted as samples, exempt from duty, remnants of cloth not exceeding 20 centimeters in length, though having the full width of the cloth; and articles which are unsalable on account of their incomplete character.

There shall also be admitted free of duty samples of wine, brandies, or liquors, when imported in receptacles of no greater capacity than 40 centiliters, the weight of the liquid not exceeding 400 grams; provided that the net weight or the total volume of samples sent from a single shipper to a single consignee does not exceed 5 kilograms or 5 liters.

Art. 215. Samples of complete articles, as manufactures of any material, articles of cutlery or hardware, handkerchiefs, shawls, hose, shirts, etc., shall pay the corresponding duties, or shall be rendered unsalable by being clipped or perforated.

Art. 217. Complete samples of merchandise which an importer desires to re-export later may be admitted without the payment of duty, provided the customs officials believe that they could be identified on leaving; in such case the collector shall require a bond or the amount of the duty leviable on the merchandise, and shall issue a certificate to the importer, properly stamped, in which the articles imported shall be specified, with their tariff classifications and the data necessary for their identification; the time allowed for re-exportation is also noted. They may be re-exported through any custom-house, where the interested party should present his samples and the certificate issued by the custom-house of entry.

When the custom-house through which the samples are to be exported has examined the samples and their identification, with the aid of the certificate which accompanies them, it shall advise the custom-house through which the goods entered that re-exportation has been duly made, so that the bond executed may be duly canceled, or the amount of duty deposited may be returned.

In the importation of samples the customs authorities may allow a period of six months for re-exportation. The term granted by the customs officials may be extended to two years by the Bureau of Customs, at the request of the interested parties; but in this case the bond required must be a cash deposit covering the amount of the duties.

The customs authorities at the port of entry shall collect the bond or appropriate the deposit only if after fifteen days from the expiration of the period allowed for re-exportation they should receive no notice that the merchandise has been re-exported.

In case of loss of the certificate referred to in the first part of this article, the custom-house of entry may, at the request of the importer,

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issue a duplicate that shall serve for re-exportation the same purpose as the original.

Commercial travelers who wish to cover various points situated in territory subject to fiscal inspection, taking with them, under bond, imported samples that are to be re-exported, shall protect these samples with the certificate issued by the custom-house at the port of entry, which in such case shall take the place of the document required by this law. The same document shall also serve to protect the samples in coastwise trade, in case the person who carries them takes passage on a foreign boat, to go from one port of the Republic to another.

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APPENDIX XII.

DIPLOMATIC AND CONSULAR OFFICES.

MEXICAN DIPLOMATIC CORPS ABROAD.

Embassy.

United States, Washington.

Legations.

Central America (1) Guatemala, for Guatemala and Salvador.
(2) San Jose, for Costa Rica and Nicaragua.
Tegucigalpa, for Honduras.
South America (1) Rio de Janeiro, for Brazil, Uruguay, Argentnia, and Paraguay.
(2) Santiago de Chile, for Chile, Bolivia, Peru and Colombia.

Austria-Hungary, Vienna.
Belgium, Brussels.
China, Pekin.
Cuba, Habana.
France, Paris.
Germany, Berlin.
Great Britain, London.
Italy, Rome.
Japan, Tokio.
Norway, Christiania.
Portugal, Lisbon.
Russia, St. Petersburg.
Spain, Madrid.

FOREIGN DIPLOMATIC CORPS IN MEXICO.

Embassy.

United States.

Legations.

Argentina.
Austria-Hungary.
Belgium.
Brazil.
China.
Cuba.
France.
Germany.
Great Britain.
Guatemala.
Italy.
Japan.
Nicaragua.
Norway.
Spain.

Russia has generally maintained a Legation at the Mexican capital, but it is not at present active.

Bolivia, Chile, Ecuador, Holland, Persia, Peru and Portugal have all accredited Ministers to Mexico, but no permanent Legations at the Mexican capital. Generally their Legations at Washington have charge of the Mexican mission, and at times their Ministers at the American capital visit Mexico and remain in residence there during some months of the year.

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Mexico maintains Consular Officers in many parts and countries of the world, and in Mexico are maintained Consular Officers from most of the foreign governments.

MEXICAN CONSULAR OFFICERS ABROAD.

Argentina.

Buenos Aires,
Cordoba,
Rosario.

Austria-Hungary.

Brunn,
Budapest,
Fiume,
Pozsony,
Trieste,
Vienna.

Belgium.

Antwerp,
Bruges,
Brussels,
Charleroi,
Ghent,
Liege,
Namur,
Luxemburg.

Bolivia.

Cochabamba,
La Paz,
Oruro,
Potosi,
Santa Cruz,
Sucre,
Topiza.

Brazil.

Bahia,
Para,
Recife (Pernambuco),
Rio de Janeiro,
San Luis de Maranhão,
Santos.

Colombia.

Barranquilla,
Bogotá,
Buenaventura,
Cartagena.

Costa Rica.

San Jose.

Cuba.

Cardenas,
Cienfuegos,
Gibara,
Guantanamo,
Havana,
Manzanillo,
Matanzas,
Sagua la Grande,
Santiago de Cuba.

Chile.

Antofagasta,
Caldera,
Coquimbo,
Coronel,
Iquique,
Santiago,
Talcahuano,
Taltal,
Valdivia,
Valparaiso.

China.

Canton,
Foochow,
Shanghai.

Denmark.

Copenhagen,
Saint-Thomas.

Dominican Republic.

Santo Domingo.

Ecuador.

Guayaquil,
Quito.

France.

Argel,
Argelia,
Bayonne,
Bordeaux,
Cherbourg,
Cognac,
Havre,
Lyons,
Nice,
Paris,
Saint Nazaire (Sur Loire),
Vichy.

Germany.

Berlin,
Bremen,
Breslau,
Chemnitz,
Danzig,
Dresden,
Düsseldorf,
Frankfurt-am-Main,
Hamburg,
Hanover,
Leipzig,
Mainz,
Mannheim,
Munich,
Nürenberg,
Stettin,
Stuttgart.

Great Britain and Possessions.

Adelaide (Australia),
Auckland (New Zealand),
Barrow-in-Furness,
Belfast,
Belize (British Honduras),
Birmingham,
Bridgetown (Barbadoes),
Bristol,
Calcutta (India),
Cardiff,
Colombo (Ceylon),

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(Mexican Consular Officers Abroad (*continued*).

Dover,
Dublin,
Falmouth,
Gibraltar,
Glasgow,
Great Grimsby,
Halifax (Canada),
Hong-Kong,
Kingston (Jamaica),
Liverpool,
London,
Manchester,
Maryport,
Melbourne and Victoria (Australia),
Montreal (Canada),
Newcastle (New South Wales),
Newcastle-on-Tyne,
Puerto España (Trinadad),
Quebec (Canada),
St. John (Canada),
Southampton,
Sidney (New South Wales),
Toronto (Canada),
Vancouver (Canada),
Winnipeg (Canada).

Guatemala.

Coban,
Guatemala,
Huehuetenango,
La Libertad,
Mazetenango and Retalhuleu.
Quezetalango and San Marcos.

Haiti.

Port-au-Prince.

Honduras.

Amapala,
Puerto Cortes,
Tegucigalpa.

Italy.

Bolonia,
Brindisi,
Caglieri,
Cerdeña,
Catania,
Florence,
Genoa,
Liorna,
Messina,
Milan,
Naples,
Palermo,
Perugia,
Rome,
Turin,
Venice.

Japan.

Yokohama.

Monaco.

Monaco.

Netherlands.

Amsterdam,
Rotterdam.

Nicaragua.

Managua.

Norway.

Bergen,
Christiania,
Christiansand S,
Christiansand N,
Grimstad.
Stavenger,
Trondhjem.

Panama.

Colon,
Panama.

Paraguay.

Asuncion.

Peru.

Callao,
Lima,
Mollendo.

Portugal.

Lisbon,
Oporto,
San Miguel (Azores),
San Vicente (Cape Verde).

Russia.

Helsingfors (Finland),
Libau (Curland),
Moscow,
Riga,
St. Petersburg.

Salvador.

San Salvador.

Spain.

Algeciras,
Alicante,
Almeria,
Barcelona,
Bilbao,
Cadiz,
Cartagena,
Cordoba,
Coruña,
Gijon,
Granada,
Jerez,
Las Palmas (Canary Islands),
Madrid,
Mahon,
Malaga,
Palma (de Mallorca).
Puerto de Santa Maria,
Santa Cruz de la Palma (Canary Islands).
Santa Cruz (Tenerife),
San Sebastian,
Santander,
Sevilla,
Valencia,
Valladolid,
Vigo,
Villagarcia de Aroza.

Sweden.

Gotenburg,
Stockholm.

Switzerland.

Berne,
Geneva,
Lugano,
Zürich.

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(Mexican Consular Officers Abroad (*continued*).

United States of North America and Possessions.

Baltimore,
Boston,
Brownsville (Tex.),
Calexico (California),
Chicago,
Cincinnati,
Clifton (Arizona),
Del Rio (Tex.),
Denver,
Detroit,
Douglas (Arizona),
Eagle Pass (Tex.),
El Paso (Tex.),
Franklin (Ohio),
Galveston,
Honolulu (Hawaiian Islands),
Indianapolis,
Kansas City
Laredo (Tex.),
Los Angeles,
Louisville,
Manila (Philippine Islands),
Mobile,
Naco and Bisbee (Arizona),
Newport News,
Nogales (Arizona),
Norfolk,
New Orleans,
New York,
Pascagoula (Miss.),
Pensacola (Fla.),
Philadelphia,
Phoenix (Arizona),
Pittsburg,
Port Arthur (Tex),
Portland (Oregon),
Rio Grande City (Tex.),
Rome (Tex.),
Sabine Pass (Tex.),
San Antonio,
San Diego (California),
San Francisco,
Seattle,
St. Louis,
San Juan (Porto Rico),
Tacoma,
Texas City (Tex.),
Tucson (Arizona),
Yuma (Arizona).
Also at Ancon, on the Isthmus of Panama.

Venezuela.

Caracas,
La Guayra,
Puerto Cabello.

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FOREIGN CONSULAR OFFICERS IN MEXICO.

(Including Consuls General, Consuls and Consular Agents.)

Argentina.

Mexico City.

Austria-Hungary.

Merida and Progreso (Yuc.),
Mexico City,
Monterrey (N. L.),
Tampico (Tam.),
Veracruz.

Belgium.

Campeche,
Chihuahua,
Guadalajara (Jal.),
Guaymas (Son.),
Merida (Yuc.),
Mexico City,
Monterrey (N. L.),
Puebla,
San Luis Potosi,
Tampico (Tam.),
Tehuantepec (Oax.),
Torreon (Coah.),
Veracruz.

Brazil.

Mexico City,
Veracruz.

Bolivia.

Acapulco (Gro.),
Guadalajara (Jal.),
Guaymas (Son.),
Mexico City,
Monterrey (N. L.),
Puebla,
San Luis Potosi,
Tampico (Tam.).

Chile.

Guadalajara (Jal.),
Manzanillo (Col.),
Mazatlan (Sin.),
Mexico City,
Salina Cruz (Oax.),
Tampico (Tam.),
Veracruz.

Colombia.

Mazatlan (Sin.),
Mexico City,
Tampico (Tam.),
Veracruz.

Costa Rica.

Coatzacoalcos,
Frontera (Tab.),
Matamoros (Tam.),
Merida (Yuc.),
Mexico City,
Puerto Mexico (Ver.),
Tampico (Tam.),
Veracruz.

Cuba.

Coatzacoalcos,
Puerto Mexico (Ver.),
Frontera (Tab.),
Matamoros (Tam.),
Merida (Yuc.),
Mexico City,
Tampico (Tam.),
Veracruz.

Denmark.

Mexico City,
Veracruz.

Dominican Republic.

Mexico City.

Ecuador.

Guaymas (Son.),
Mazatlan (Sin.),
Mexico City,
Salina Cruz (Oax.),
Tampico (Tam.),
Veracruz.

France.

Aguascalientes,
Campeche,
Chihuahua,
Durango,
Guadalajara (Jal.),
Guaymas (Son.),
Guanajuato,
Hermosillo (Son.),
Isla del Carmen (Cam.),
Jicaltepec and San Rafael (Oax.),
Mazatlan (Sin.),
Merida (Yuc.),
Monterrey (N. L.),
Morelia (Mich.),
Oaxaca,
Orizaba and Cordoba (Ver.),
Pachuca (Hgo.),
Progreso (Yuc.),
Puerto Mexico,
Coatzacoalcos (Ver.),
Salina Cruz (Oax.),
San Juan Bautista (Tab.),
San Luis Potosi,
Tampico (Tam.),
Tapachula (Chih.),
Tepic,
Tuxpam (Ver.),
Veracruz.

Great Britain.

Acapulco (Gro.),
Carmen Isla de (Cam.),
Chihuahua,
Colima,
Coatzacoalcos,
Puerto Mexico (Ver.),
Ensenada (B. Cfa.),
Frontera (Tab.),
Guanajuato,
Guaymas and Santa Rosalia (Son.),
Guadalajara (Jal.),
La Paz (B. Cfa.),
Mazatlan (Sin.),
Mexico City,
Monterrey (N. L.),
Progreso (Yuc.),
Puebla and Oaxaca,
Salina Cruz (Oax.),
Saltillo (Coah.),
Soconusco and San Benito (Chis.),

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Foreign Consular Officers in Mexico (*continued*).

Tampico (Tam.),
Tuxpam (Ver.),
Xcalak (Q. R.),
Veracruz.

Germany.

In Carmen (Isla del) (Camp.),
Chihuahua (Chi.),
Ciudad Juarez (Chi.),
Colima (Col.),
Durango (Dgo.),
Guadalajara (Jal.),
Guanajuato
Guaymas (Son.),
Mazatlan (Sin.),
Merida (Yuc.),
Mexico City,
Monterrey (N. L.),
Oaxaca,
Puebla,
Salina Cruz (Oax.),
San Cristobal Las Casas (Chis.),
San Luis Potosi,
Tampico (Tam.),
Tapachula (Chih.),
Tepic,
Torreon (Coah.),
Veracruz.

Guatemala.

Comitan (Chis.),
Guadalajara (Jal.),
Hermosillo (Son.),
Manzanillo (Col.),
San Cristobal Las Casas (Chis.),
Tapachula (Chis.),
Tuxtla Gutierrez (Chis.),
Veracruz.

Honduras.

Guaymas (Son.),
Manzanillo (Col.),
Mazatlan (Sin.),
Merida (Yuc.),
Pachuca (Hgo.),
San Luis Potosi,
Tapachula (Chis.),
Veracruz.

Italy.

Acapulco (Gro.),
Carmen, Isla del (Cam.),
Chihuahua,
Gomez Palacio (Dgo.),
Guadalajara (Jal.),
Guaymas (Son.),
Mazatlan (Sin.),
Merida (Yuc.),
Mexico City,
Monterrey (N. L.),
Salina Cruz (Oax.).
San Luis Potosi,
Tampico (Tam.),
Veracruz.

Monaco.

Mexico City.

Netherlands.

Merida (Yuc.),
Mexico City,
Tampico (Tam.),
Veracruz.

Nicaragua.

Mexico City.

Norway.

Campeche,
Coatzacoalcos,
Puerto Mexico (Ver.),
Frontera (Tab.),
Guaymas (Son.),
Isla del Carmen (Cam.),
Manzanillo (Col.),
Mazatlan (Sin.),
Mexico City,
Progreso (Yuc.),
Salina Cruz (Oax.),
Tampico (Tam.),
Veracruz.

Panama.

Mexico City,
Veracruz.

Paraguay.

Mexico City,

Persia.

Mexico City,
Veracruz.

Peru.

Mazatlan (Sin.),
Merida (Yuc.),
Mexico City,
Pachuca (Hgo.).

Portugal.

Mexico City,
Oaxaca,
San Luis Potosi,
Veracruz.

Russia.

Isla del Carmen (Cam.),
Mexico City,
Monterrey (N. L.),
Veracruz.

Salvador.

Colima and Manzanillo,
Mazatlan (Sin.),
Mexico City,
Salina Cruz (Oax.),

Spain.

Aguascalientes,
Carmen (Isla del) (Cam.),
Celaya (Gto.),
Chihuahua,
Ciudad Victoria (Tam.),
Coatzacoalcos,
Puerto Mexico (Ver.),
Cuernavaca (Mor.),
Durango,
Gomez Palacio (Dgo.).
Guadalajara (Jal.),
Jalapa (Ver.),
Matamoros (Tam.),
Mazatlan (Sin.),
Merida and Progreso (Yuc.),
Mexico City,
Monterrey (N. L.),
Morelia (Mich.),

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Foreign Consular Officers in Mexico (*continued*).

Oaxaca,
Puebla,
San Luis Potosi,
San Juan Bautista (Tab.),
Tampico (Tam.),
Tapachula (Chis.),
Tehuantepec (Oax.),
Toluca (Mex.),
Torreon (Coah.),
Veracruz.

Sweden.

Isla del Carmen (Cam.),
Guadalajara (Jal.),
Merida and Progreso (Yuc.),
Mexico City,
Puerto Mexico,
Coatzacoalcos (Ver.),
Salina Cruz (Oax.),
Tampico (Tam.),
Veracruz.

Switzerland.

Mexico City.

United States.

Acapulco (Gro.),
Aguascalientes,
Alamos (Son.),
Boquillos (Coah.),
Campeche,
Cananea (Son.),
Chihuahua,
Ciudad Juarez (Chih.),
Ciudad Porfirio Diaz (Coah.),
Ciudad Victoria (Tam.),
Coatzacoalcos,
Puerto Mexico (Ver.),
Durango,
Ensenada (B. Cfa.),
Frontera (Tab.),
Guadalajara (Jal.),
Guanajuato,
Guaymas (Son.),
Hermosillo (Son.),
Isla del Carmen (Cam.),
Jalapa (Ver.),
La Paz (B. Cfa.),
Manzanillo (Col.),
Matamoros (Tam.),
Mazatlan (Sin.),
Mexico City.
Nogales (Son.),
Nuevo Laredo (Tam.),
Oaxaca,
Parral (Chih.),
Progreso (Yuc.),
Puebla,
Salina Cruz (Oax.),
Saltillo (Coah.),
San Jose (B. Cfa.),
San Luis Potosi,
Sierra Mojada (Coah.),
Tampico (Tam.),
Tapachula (Chis.),
Tlacotalpam (Ver.),
Topolobampo (Sin.),
Torreon (Coah.),
Tuxpam (Ver.),
Veracruz,
Zacatecas.

Uruguay.

Mexico City.

Venezuela.

Mexico City,
Puebla,
Veracruz.

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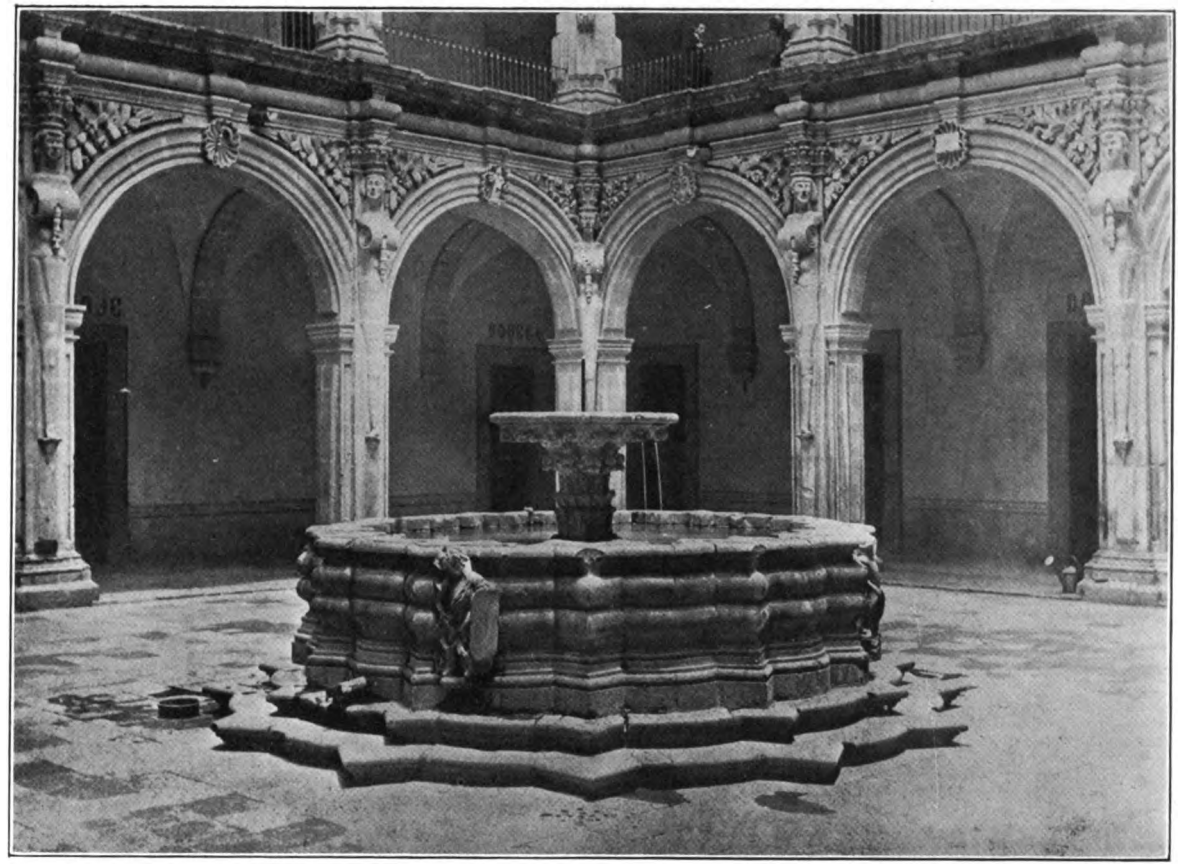

THE PATIO AND FOUNTAIN OF WHAT WAS ORIGINALLY THE CONVENT OF ST. AUGUSTINE IN QUERETARO.

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APPENDIX XIII.

WEIGHTS AND MEASURES.

The metric system is in official use in the Republic of Mexico, having been adopted by the Government in the year 1862. It is used to compute all customs and other duties to be paid to the General Government, in the measurement of public lands, and by the railroads in all freight and other transactions, and is exclusively taught in the public schools. The old-time weights and measures were founded on Spanish models, but, owing to the inexactness of the first standards and to subsequent changes, differ at present very widely from their originals. The value of the metric system here assigned to each denomination of the old weights and measures is that fixed by the Mexican Government at the time of the adoption of the metric system. These tables are from the first edition of the Handbook of Mexico, published by the Bureau of the American Republics in 1891. They are reproduced here because the nomenclature of the old system is still in use in publications on Mexico. By law of June 19, 1895, the metric system was declared the only legal system of weights and measures in the country, and became compulsory throughout the Republic on September 16, 1896.

The equivalent of the *unit* in each system is here given.

LENGTH.

1 inch =25.4001 millimeters.	1 millimeter=0.03937 inch.
1 inch = 2.54001 centimeters.	1 centimeter=0.3937 inch.
1 foot = 0.304801 meter.	1 meter =3.28083 feet (39.37 inches).
1 yard= 0.914402 meter.	1 meter =1.093611 yards.
1 mile = 1.60935 kilometers.	1 kilometer =0.62137 mile.

AREA.

1 square inch =645.16 square millimeters.	
	1 square millimeter=0.00155 square inch.
1 square inch = 6.452 square centimeters.	
	1 square centimeter=0.155 square inch.
1 square foot = 0.0929 square meter.	
	1 square meter =10.764 square feet.
1 square yard= 0.8361 square meter.	
	1 square meter =1.196 square yard.
1 square mile = 2.59 square kilometers.	
	1 square kilometer =0.3861 square mile.
1 acre =0.4047 hectares.	
	1 square kilometer =100 hectares.
1 hectare =2.471 acres.	

VOLUME.

1 cubic inch =16,387.2 cubic millimeters.	
	1 cubic millimeter=0.000061 cubic inch.
1 cubic inch =16.3872 cubic centimeters.	
	1 cubic centimeter=0.061 cubic inch.
1 cubic foot =0.02832 cubic meter.	
	1 cubic meter =35.314 cubic feet.
1 cubic yard =0.7646 cubic meter.	
	1 cubic meter =1.3079 cubic yard.

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CAPACITIES.

1 quart =0.94636 liter.
1 liter =1.05668 quart (liquid).
1 gallon =3.78543 liters.
1 liter =0.26417 gallon (liquid).
1 quart =0.9081 liter.
1 liter =0.9081 quart (dry).
1 bushel =0.35239 hectoliter.
1 hectoliter=2.83774 bushels (U. S.).
1 U. S. bushel per acre=0.87078 hectoliters per hectare.
1 hectoliter per hectare=1.1484 U. S. bushels per acre.

MASS.

1 avoirdupois pound=0.45359 kilogram.
1 kilogram =2.20462 avoirdupois pound.
1 troy pound =0.37324 kilogram.
1 kilogram =2.67923 troy pounds.

The equivalents of older Mexican (and Spanish) measurements appear in the tables below.

LINEAR MEASURES.

1 legua (league)=5,000 varas =4.19 kilometers=2.604375 miles.
1 vara (yard) = 3 piés =0.83800 meter =2.749578 feet.
1 pié (foot) =12 pulgadas=0.27933 meter =0.916526 foot.
1 pulgada (inch)=12 lineas =0.02328 meter =0.916526 inch.
1 linea (line) =0.00194 meter =0.076377 inch.

The vara is also divided (for dry-goods selling) into palmos or cuartas.
1 palmo or cuarta=0.209500 meter=0.687394 foot=8.248728 inches.

SUPERFICIAL OR SQUARE MEASURE.

1 square legua =1,755.61 hectares = 4,339.4 acres.
1 square vara =0.702244 square meter= 7.559000 square feet.
1 square pié =0.078027 square meter= 0.839888 square foot.
1 square palmo =0.043890 square meter =68.030094 square inches.
1 square pulgada=0.000542 square meter = 0.84012 square inch.

Land or agrarian measures.

Spanish name	Nearest English equivalent	Length (varas)	Breadth (varas)	Hectares	Acres
Hacienda	Plantation	25,000	5,000	8,778.0500000	21,697.000
Sitio de ganado mayor	Cow ranch	5,000	5,000	1,755.6100000	4,339.400
Sitio de ganado menor	Sheep ranch	3,333½	3,333½	780.2711111	1,928.133
Fundo legal para pueblo	Legal town site	1,200	1,200	101 1231360	244.140
Labor	Field	1,000	1,000	70.2244000	975.532
Caballería de tierra	Knighthold of land	1,104	552	42.7953111	105.751
Fanega sembradura de maiz.	Sowing ground for 1 fanega of corn.	276	184	3 5662750	8.813
Solar para casa, molino, ó venta.	Site for a house, mill, or inn.	50	50	.1756610	.434

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Hydrometric Measure.

This was used for measuring and distributing water for irrigation and domestic uses:

1 *buey* (ox)	= 48 *surcos.*
1 *surco* (furrow)	= 8 *reales* or *limones.*
1 *naranja* (orange)	= 2 *dedos.*
1 *real* (bit) or *limón* (lemon)	= 3 *naranjas.*
1 *dedo* (finger)	= 9 *pajas* (straws).

According to the old ordinances of lands and waters established in Spanish times, the *buey* of water was as much as would flow through an aperture 1 *vara* (0.838 meter) square, no head or pressure being mentioned. By a law of the Mexican Republic, of August 2, 1863, 1 *surco* was made equal to 6½ liters per second for rural measures, and the *paja* was made equal to 0.45 liters per minute for town measurements. This distinction was intended to make the *surco* a unit for irrigation, while the *paja* was made the unit for distributing water to houses, etc., in towns.

Cubic Measures.

	Cubic meter.	Cubic yard.
1 cubic *vara*	= 0.588480	= 0.769734
1 cubic *pie*	= 0.021795	= 0.769484
1 cubic *palmo*	= 0.009195	= 0.324634

Dry Measures.

	Liters.	Bushels.
1 *carga*=2 fanegas	=181.629775	= 5.154357
1 *fanega*=12 almudes	= 90.814888	= 2.577178
		Pecks.
1 *almud*=4 cuartillos	= 7.567907	= 0.859109
		Dry quarts.
1 *cuartillo* (quart)	= 1.891977	= 1.718122

Oil Measure.

	Liter.	U. S. liquid quart.
1 *cuartello*	= 0.506162	= 0.534870

Wine Measure.

	Litre.	U. S. Liquid Quart.
1 *cuartillo*	= 0.456264	= 0.482140

Commercial Weights.

	Kilogrammes.	U. S. Pounds avoirdupois.
1 *quintal*=4 *arrobas*	= 46.024634	=101.444
1 *arroba*=25 *libras*	= 11.506159	= 25.361
1 *libra* (pound)=16 *onzas*	= 0.460246	= 1.01444
		Ounces avoirdupois.
1 *onza* (ounce)=16 *adarmes*	= 0.028765	= 1.0148
1 *adarme* (dram)=36 *granos*	= 0.001798	= 0.06343
		Grains.
1 *grano* (grain)	= 0.0000499	= 0.77160

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In commerce there was used the following relation between the kllogramme and the pound (*libra*) different from the ratio as fixed by Government, viz.:

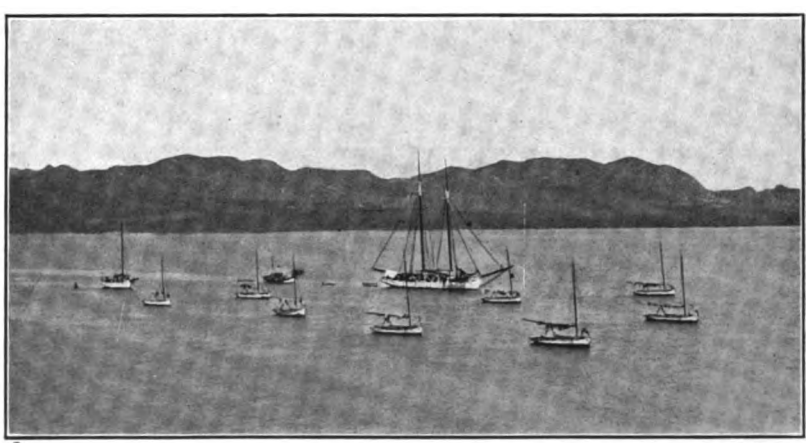
1 kilogramme ..... =2.1733 pounds (*libras*).

There is also a weight called *carga*, used in commerce, in freighting, and in mining:

1 *cargo*=12 *arrobas*=300 pounds....=138.073902 kilogrammes=304.332 United States pounds avoirdupois.

PRECIOUS METAL WEIGHTS.

	Kilogramme.	Ounces avoirdupois.
1 *marco*=8 *onzas*	=0.230123	=8.1184
1 *onza*=8 *ochavas*	=0.028765	=1.0148
1 *ochava* (eighth)=6 *tomines*.....	=0.003596	=0.12685
		Grains.
1 *tomin*=12 *granos*	=0.000599	=9.25920
1 *grano*	=0.0000499	=0.77160



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APPENDIX XIV.

PATENT AND TRADE-MARK LAWS.*

The first patent law of Mexico was framed and issued in 1832, but it was not until 1886 that any remarkable activity was noted in this branch of development, as in the years intervening between 1832 and 1853 not a single patent was granted. From 1854 to 1875 the entire number issued was only 41; from 1876 to 1885 there were 360; 102 in 1886, and from that time until 1889 the patent grants numbered 406.

The patent law of June 7, 1890, amended June 6, 1896, has been repealed by law of August 25, 1903, now in force.

PATENT LAW.

The new patent law of the Republic, promulgated August 25, 1903, contains 121 articles. The salient points of the law are the following:

Anyone who has made any new invention of an industrial character may acquire the exclusive right, by virtue of the provisions of articles 28 and 85 of the Constitution, to exploit or work said invention for his benefit, during a certain term, under the rules and conditions prescribed by law. In order to acquire this right it is necessary to obtain a patent of invention.

The description of a patent, and what are or are not patentable, are about the same as in other countries of the world. The owner of a patent, and this may be one, two or more persons, shall have the exclusive right to work the same during the time fixed by law, which is a period of twenty years—divided into two terms, the first consisting of one year, for which the fee is 5 *pesos*, and the second of nineteen years, for which the fee is 35 *pesos*—and may be extended five years longer.

Application for a patent must be made in due form, with specifications, a set of claims, a drawing or drawings, all in duplicate, the date of the application being the legal date of the patent. The legal date for a foreign patent is that of its original application. Exploitation is not obligatory, but after three years the Patent Office shall have the right to grant to third parties a license to exploit. Patents are issued by the Patent Office in the name of the President of the Republic, and are signed by the Secretary of (*Pomento*) Promotion. Notice is published in the *Gaceta Oficial de Patentes y Marcas* (Official Gazette of Patents and Trade-Marks). Patents may be expropriated by the Federal Executive, on the ground of public utility.

The regulations (38 articles) provide that the patentee or his authorized attorney must comply with specific forms as to description, claims and drawings; they require certain paper, ink, relative size, and character of models. These are not returned in any circumstances.

TRADE-MARK LAW.

Mexico became a party to the International Agreement respecting trademarks, and the Decree on the subject was published in the *Diario Oficial* (the official government publication) of September 13, 1909. By this

*The full English texts of the Patent and Trade-Mark Laws and Regulations were published in the *Monthly Bulletin* of the International Bureau of the American Republics (Pan American Union) for December, 1903.

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Decree, and the agreement implied in it, protection of trade-marks, of citizens of the contracting States, is secured in the Republic by complying with the regulations established by that international organization. Registration is made, and announcement of the fact is authorized in the publication issued by the International Office at Berne, Switzerland.

Mexico joined the International Union for the Protection of Industrial Property on June 10, 1903.

The Trade-Mark Law is divided into sections, the first giving the law itself, the second giving the rules of practice of that law. The date at which it went into effect is August 25, 1903.

Section I has eight Chapters with 93 Articles. The substance of them is as follows: A mark is the characteristic designation used by a manufacturer, agriculturist or merchant on the articles which he sells for the purpose of distinguishing them. For its exclusive use it must be registered in the Patent and Trade-Mark Office (in the Department of Promotion (*Fomento*), Colonization and Industry), under specific rules concerning its description, the name of the owner, the object to which it is to be applied, with two copies of the application, an electrotype of the mark, and twelve copies of the mark in the form in which it is to be used. Restrictions are placed upon the character of a mark, and penalties are established for misleading or false statements about any mark.

Commercial names and announcements are recognized as the exclusive property of the owner, and usurpation or imitation thereof may be prosecuted, but the owner of such name is entitled to have it published in the Official Patent and Trade-Mark Gazette, and should do so in order to obtain the privileges conveyed by such act.

Certain fees are established for the registration or renewal of the registration of a mark (5 *pesos*), and also for the publication of a commercial name (1 *peso*) and the registration of a commercial announcement (2 *pesos* for five years); these dues are paid in revenue stamps. Of course, patents and trade-marks issued before this newer law are protected, and rules are given whereby all such details are properly guarded.

Section II has 27 Articles concerning the Rules of Practice of the Trade-Mark Law. They specify the method of making the application, the form of document required, that all petitions and documents must be typewritten, on paper of exact form and weight, and the character of electrotype for a mark or commercial announcement. The fees for such procedures are likewise given.

The registration of a mark must be renewed every twenty years.

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APPENDIX XV.

BIBLIOGRAPHY.

Of the approximately 1,500 volumes indexed in the Columbus Memorial Library of the Pan American Union, it is manifestly inadvisable to present more than a very limited list of books which are serviceable for practical consultation by the reader on the subject of Mexico. Previous editions of the Handbook have given reference to a really exhaustive number of works, but since the last edition (1904), so many publications, both official and unofficial, have appeared that to extend that list would make it altogether too cumbersome for the purpose intended by this bibliography. It has been thought best, therefore, to mention here only a few books that will aid the student, and especially those that are available in most large libraries.

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